

AMATEUR
AMATEUR
AMATEUR
AMATEUR

RADIO

DECEMBER 1957



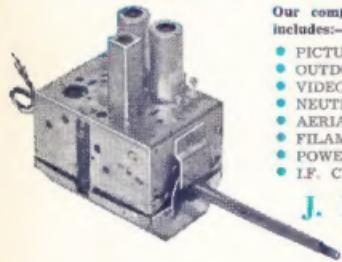
AEGIS POWER-LEAD T.V. FILTER

FILTERS OUT ELECTRICAL INTERFERENCE AT T.V. FREQUENCIES!

Type LF-ITV: Rating 240v.—2a. maximum (500 watts). Tested under exacting conditions and proved thoroughly reliable. May be used with appliances fed from two or three core power leads. Retails at £2.

- Now available from Magraths

MAGRATHS FOR T.V. COMPONENTS



Our comprehensive range of T.V. Parts and Components includes:-

- PICTURE TUBES
- AEGIS T.V. FILTER
- OUTDOOR & INDOOR ANTENNAS
- VIDEO & LF. COUPLING & TRAP COILS
- NEUTRALISING & COMPENSATION COILS
- AERIAL AND MIXER COILS
- FILAMENT CHOKES & TRIMMER CAPACITORS
- POWER & LF. TRANSFORMERS
- LF. CHASSIS Assemblies.
- Turret TUNERS, etc.

J. H. MAGRATH & CO. PTY. LTD.
208 LITTLE LONSDALE STREET,
MELBOURNE, VIC. Phone: FB 3731



registered at G.P.O., Melbourne, for
circulation by post as a periodical.

AMATEUR

RADIO

"HAM" RADIO SUPPLIERS

(KEN MILLBOURN, PROP.)

5A MELVILLE STREET, HAWTHORN, VICTORIA

North Balwyn Tram Passes Corner, near Vogue Theatre.

Money Orders and Postal Notes payable North Hawthorn P.O. Packing Charge on all goods over 10 lbs. in weight, 5/- extra.

NOTE THESE VALVE PRICES

Look at these Bargain Priced NEW VALVES—

IB5	2/6	6K5	7/6	7C7	2/6	815	35/-
IK4	5/-	6K7G	5/-	7F7	5/-	829B	£5
IK5	10/-	6K8G	10/-	7N7	5/-	954	5/-
2A3	10/-	6L7	10/-	7W7	2/6	955	5/-
2A5	10/-	6N7	10/-	12AH7	7/6	957	10/-
2X2	7/6	6N8	15/-	12C8	7/6	100TH	35/-
3Q5	5/-	6Q7G	5/-	12H6	7/6	CV66	5/-
6AG5	10/-	6SCT	10/-	12J5	7/6	EA50	2/6
6AJ5	10/-	6SF7	12/6	12SF7	10/-	RK34	5/-
6B4	12/6	6SH7G	4/-	12SG7	18/-	VR90	
6B3G	15/-	6SJ7GT	12/6	12SJ7	10/-	VE100	5/-
6C8	7/6	6SK7GT	12/6	12SK7	18/-	VE191	5/-
6E5	10/-	6SS7	12/6	12SN7	12/6	VR102	5/-
6G6	10/-	6UT	10/-	12SQ7	2/6	VR103	5/-
6G8G	3/6	6SH7G	4/-	12SQ7GT	2/6	VR150	12/6
6J5G	3/6	6VG6GT	12/6	12SR7	12/6	VT50	2/6
6J6	12/6	7A6	5/-	807	20/-	VT52	10/-
C.R. Tubes—SFP7 (U.S.A. 5FP1)					5/- each		

CR. Tubes—SFP7 (U.S.A. 5FP1)

5/- each

1C7 3/- each or 7 for £1

EA50 2/6 each or 10 for £1

7C7 2/6 each or 10 for £1

Localt valve sockets, 1/6 ea.

6J5G 3/6 each or 8 for £1

6AG7 3/11 each or 7 for £1

EF50 3/6 each or 7 for £1

EF50 valve sockets, 3/6 ea.

VT501 7/6 each or 3 for £1

CV66 (RL37) 5/- ea. 5 for £1

RK34 5/- each or 5 for £1

6K7G 5/- each or 5 for £1

8Q7G 5/- each or 5 for £1

6SH7 5/- each or 5 for £1

6SJ7GT 4/- each or 6 for £1

7F7 5/- each or 5 for £1

854, 955 5/- ea. or 5 for £1

12SF7 10/- each or 3 for £1

12SN7 7/6 each or 3 for £1

2X2 7/6 each or 3 for £1

VT127 4/11 each or 5 for £1

VT127 4/11 each or 5 for £1

5/- each

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Published by the Wireless Institute of Australia,
C.O.R. House, 191 Queen Street,
Melbourne, C.I.

EDITOR:
J. G. MARSLAND, VK3NY.

TECHNICAL EDITOR:
K. E. PINCOTT, VK3AJJ.

NOTES EDITOR:
V. M. JONES, VK3YE.

TECHNICAL STAFF:

J. C. DUNCAN, VK3VZ.
D. A. NORMAN, VK3UC.
R. S. FISHER, VK3OM.

ADVERTISING REPRESENTATIVE:
BEATRICE TOUEAU,
96 Collins St., Melbourne, C.I.
Telephone: MF 4505.

PRINTERS:
"RICHMOND CHRONICLE"
Shakespeare St., Richmond, E.1.
Telephone: JB 2419.

MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," C.O.R. House, 191 Queen Street, Melbourne, C.I., on or before the 8th of each month.

Subscription rate in Australia is 12/- per annum, in advance (post paid) and A15/- in all other countries.

Wireless Institute of Australia (Victorian Division) Rooms' Phone Number is MY 1987.

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official broadcasts.

VK3WI: Sundays, 1100 hours EST, 7146 Kc.; 1800 hours EST, 144 Mc. No frequency checks available from VK3WI. Interstate working frequency, 7050 Kc.

VK3WI: Sundays, 1100 hours EST, simultaneously on 3560 and 14248 Kc., 57.5 and 145.25 Mc. Interstate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 3560 and 14248 Kc. W.L.A. Country Hook Sunday mornings 0900 hours. Please call VK4WI on 20 Mc. VK4WI is on 40 mtrs. Sunday night re-broadcast of the news on 20 mtrs at 2100 hours, conducted by VK4WI.

VK5WI: Sundays, 1800 hours EAST, on 7146 Mc. Frequency checks are given by VK5MD and VK5WI by arrangements on all bands to 56 Mc.

VK6WI: Sundays, 0830 hours WAST, on 7146 Mc. No frequency checks available.

VK7WI: Sundays at 1000 hours EST, on 7146 Kc. and 3672 Kc. No frequency checks are available.

VK8WI: Sundays, 1900 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. bands. Individual frequency checks of Amateur Stations given when VK8WI is on the air.

EDITORIAL



RETROSPECT

The sudden advent of Sputniks I. and II. has thrown the world into a dither. Organisations especially formed to track the U.S. satellite were literally caught napping, and once again the Amateur fraternity were alerted to breach the gap. This they did expertly and with the usual celerity. The Federal station VK3WIA was quickly in operation accepting reports from widely separated parts of Australia and the Islands and collecting the data on signal reports and details of tracking by directional antennae.

The earlier reluctance of official organisations to enlist the aid of the Australian Amateur for the I.G.Y. activities was quickly dispelled in view of their own unpreparedness. The Amateur did his job and did it unselfishly—how well will only be known after the sorting, sifting and correlation of the reports have been made. Events such as these were of great public moment and the Amateur in turn was not without his rightful share in the ensuing publicity.

In retrospect, however, there are questions we should searchingly ask of ourselves. Are we fully exploring and exploiting our erstwhile heritage as experimenters? Are we keeping abreast of new technological and electronic developments? Are

we doing our part fully in promoting goodwill and friendship internationally? Are we completely employing our ability and usefulness to public service in the community as we could? Is the Amateur's Code our guiding light in our approach to life?

Only our conscience will allow us to answer these questions without evasion. Introspection is very appropriate to the approaching Christmas season so see that the results of your soul-searching are for your own peace of mind and the good of Amateur Radio generally.

Take more interest in the activities of your local Division, find out how the Institute as a whole is run and organised if you do not know; commit your experiments and circuitry to paper for publication in your own magazine; contact your overseas contemporaries and pass more than the time of the day with him to gain his friendship, and lastly operate by the Amateur's Code. In these various ways you will put back something into Amateur Radio as well as gaining something from its acquaintance.

The Federal Executive, on behalf of the Federal Council of the Institute, wish ALL members the Season's Greetings and a Prosperous and Fruitful NEW YEAR.

FEDERAL EXECUTIVE.

THE CONTENTS

How's Your Receiver?	2	Amendments to National Field Day Rules for 1958	10
Valve Data: 12BH7 Medium-Mu Twin Triode	3	YL Corner	11
Harmonics and Selectivity of Transmitters—Part One	5	"OK DX Contest 1957"	11
Books Reviewed:		W.I.C.E.N. Notes	11
"The Radio Amateur Operator's Handbook, 1957"	7	DX Activity by VK2QL	12
"R.C.A. Transmitting Tubes"	7	Prediction Chart for Dec. '56	12
"R.C.A. Receiving Tubes"	7	Fifty Megacycles and Above	14
Amateur Call Signs	9	S.W.L. Section	15
Delegate for I.T.U. Conference	10	Federal, QSL, and Divisional Notes	17
		Correspondence	24
		Index to Volume 23—1957	24

How's Your Receiver?

BY N. BURTON,* BERS11494

IT is somewhat of a chastening experience to listen round the Amateur bands and note the apparent number of what might be termed sub-standard receivers that are in use. It is not uncommon to hear a description of the station equipment which includes a well known receiver and then hear the rider, "but this — receiver needs doing up."

This state of affairs is hardly a good advertisement for the Radio Amateur and as the same state of things has been noted visiting shacks, one is tempted to wonder in the average Amateur frightened to touch a commercially built receiver? It is something none of us need be afraid of; if you can build and maintain a modern transmitter, then you can overhaul your receiver.

Taking everything into account it stands to reason that many of the receivers in use today could, with benefit, stand an overhaul. Many of them are of surplus origin and even assuming it was a new one in 1945 it is now 12 years old. Some of the more popular ones are even older and if you have one very popular receiver it can be 22 years old! Time indeed for overhaul!

It is as well to start by removing the receiver from the cabinet. This can be a job (the writer's own receiver needs 32 screws and bolts removed to do this). Once free of the cabinet, there is room to work. Remove all the valves first and then find every earthing tag. Many of these will be nut and bolt with star washer efforts. Remove each individual bolt and clean the parts that are to contact; it will often be found there is rust and/or enamel beneath the bolt fixings. Once this is done check the replaced tags with a megger if possible. A few ohms here and there can make a lot of difference to a receiver's performance.

Having done this, now turn to the fixed condensers. Many of these will be of the paper variety and probably leaky. Starting at the r.f. valve remove and replace each by-pass and coupling condenser up to the diode or whatever circuit is used as second detector. It will be found possible in many cases to substitute modern small mica condensers in place of the original paper ones with advantage. Make sure the condensers have an adequate working voltage figure and do not, under any circumstances use "surplus" condensers. These can be anything up to 18 years old. The actual substitution will involve only clipping one out and soldering in another, in most cases without disturbing any other component. In the case of condensers located beneath a coil pack, certain manufacturers have the happy knack of so arranging the r.f. end of the receiver—not only will the coils have to be carefully removed and replaced, but the various leads to the coils will have to be "dressed" into the right positions. If you feel your skill is not up to this work enlist the

aid of someone whose skill is, as these condensers in the r.f. end affect the receiver performance so much.

Once the condensers have been attended to as far as the second detector, those in the audio end can be tested. If they are alright they may be left in as their effect is far less on the overall performance than the replaced condensers.

Resistors can now be checked for value and any more than 20% out in value replaced with new ones of like wattage. Few of the older receivers used any other tolerance value of resistor than 20%.

Having done this, the time is ripe to consider if any improvements can be made to the receiver. A more modern noise limiter for instance, noise limiter circuits have improved a lot in 20 years. Here the thoughts turn naturally to more efficient modern valves to replace the originals. It should be pointed out that no hard and fast rule can be laid down. It is quite easy in many cases to put in new high gain valves and get amazingly improved "S" meter readings but the signal-to-noise ratio is not of necessity improved—it may even be worse. The thing to aim at is better signal-to-noise ratio, and this is, as a rule, far easier to achieve than high gain and good signal-to-noise ratio.

The problem of valve substitution, and it is a problem, is closely linked with the actual coils used in the receiver. If these are of the old high efficiency type put in to overcome the deficiencies of the then available valves, trouble will almost certainly be encountered with self oscillation of the stage. It has been authoritatively stated that to hook up an EF50 to one of the high gain coils of the late 20's or early 30's, copper screening an eighth of an inch thick would be needed for a start; this is hardly a practical proposition.

In the case of receivers using valves of the 6K7 class an improvement is made by substituting valves like the EF39. If you can obtain some of the Osram (English) octal-based valves even better results may be obtained. These Marconi/Osram International octal-based valves have in many cases no exact counterpart in the American range and the English valves have rather better characteristics.

If you are using a surplus receiver of English origin make an effort to obtain the recommended English valves. This may seem a small point, but it is a fact that one popular English surplus receiver can be re-valved entirely with American valves and will perform well, however when the recommended English valves are installed the performance is far superior in every way.

These are the maximum alterations that seem logically possible as regards the valves, and increased gain. It is as well to bear in mind that the designer knew what he was doing and designed the coils and valves to work as a team and aimed at, and got, a certain gain

from that stage. The substitution of high gain valves ad lib is not recommended; it has been the author's privilege to handle some rx's thus "hotted up" and the curing of the instability after the modifications resulted in a performance that was little better, if any, than the original set—in some cases it was worse.

Do not confuse big "S" meter readings and a lot of noise for sensitivity to weak signals. It is quite easy to arrange to deliver several watts of noise from the output. If any modifications to the valve line-up outside the simple substitution of valves with a lower noise figure and slightly better slope are contemplated, this should at the most be limited to the r.f. valve in the first stage. This is usually a pentode and the substitution of a twin triode cathode coupled will preserve the high input impedance and at the same time improve the noise factor of the stage. An efficient valve to use thus is the ubiquitous 12AT7. Such a modification will not increase the "S" meter reading.

In the event of the feeling persisting that the r.f. gain is not enough the installation of a good two stage pre-selector should be given serious thought. Two stages are recommended as one is apt to be disappointing. Two stages allows the use of three tuned circuits (one valve is thus t.p.t.g.) with consequent beneficial effect on the front end selectivity. Such a device is carefully constructed and designed with a low noise figure in mind will add measurably to the performance of any receiver. Apart from the improvement in front end selectivity, the a.g.c. and noise limiter circuits work far more efficiently and on the higher frequency bands signals can be brought in without having the l.f. gain wide open. This is far easier on the ears. The installation of such a device hardly adds to complication of receiver operation as on the Amateur bands only a lazy rocking of the dial is needed. It is hardly ever necessary to look at the preselector as it can be heard working. The author has used such an arrangement for many years with highly satisfactory results. Four r.f. stages are well worth while.

The mixer stage in many cases can be improved. The original mixer may be a triode pentode of early design and it is often possible to substitute a more modern valve having similar operating conditions but better conversion conductance. This results in lower noise and as much noise originates in the mixer, this point should definitely be given attention. In the case of a conversion circuit using a separate oscillator replacement of the actual mixer tube with a more efficient counterpart should be given thought, especially if one is available as in the previous case, with like operating conditions.

As regards the actual oscillator valve itself, this will in many cases stand quite a bit of work on the circuit as the conditions pertaining then do not apply today—t.v.i. is in mind.

Many communication receivers are excellent producers of t.v.i., as mentioned in a previous article one well known receiver will produce t.v.i. at 75 yards. It is as well to measure the grid current of the actual oscillator valve and if this is excessive, steps must be taken to reduce this. This may seem on the face of it rather unnecessary but there are cases on record where the drive available from the oscillator was quite sufficient to have driven an 807, allowing the owner to have had easy operation on the broadcast band! The drive should be reduced to that recommended for optimum injection of the heterodyne voltage. It is advantageous at this stage to check the receiver for t.v.i. If under these conditions t.v.i. is caused, then a trap must be fitted in the cathode circuit of the oscillator valve. This should clear up the oscillator stage, except for voltage stabilising it, if this has not been done.

Continuing possible improvements, if there is room on the deck the installation of a separate circuit for supplying the a.c.g. voltage to the r.f. stages alone is worthwhile. Such a circuit needs room for an extra i.f. transformer and a diode pentode valve, and repays the installation by improving the response to weak signals, as regards audible tuning.

In the event of the receiver not possessing a crystal filter and it is felt the selectivity can be better, then the installation of a pair of miniature i.f. transformers back to back in place of one of the originals merits thought. There is usually ample room as the older i.f. coils were of large physical size and two of the modern coils will fit in the space of one of the older kind. Another way out of this selectivity problem is to replace one i.f. with a Q multiplier, this means an additional panel control tool.

This just about brings up the stage of re-aligning the receiver. The receiver should be returned to the cabinet and the base plate, etc., fitted into position. Most receivers are meant to be aligned in the cabinet and holes are provided for this purpose in the base plate.

For the actual alignment, follow the manual instructions or if the manual is missing and the receiver has an "S" meter and crystal the method recommended by R.M.E. of Peoria, Ill., may be used. Briefly, the method is this. Tune the receiver to a local station as near to the i.f. of the receiver as possible, replacing the aerial with a length of wire long enough to give half scale deflection on the meter. Allow an hour for warming up. Now switch in the filter and tune the station in with the filter in the narrowest position. Rock the i.f. trimmers about until no more deflection can be obtained on the "S" meter. The i.f. is now lined up.

For the r.f. end a 500 or 1,000 Kc. oscillator is more useful than a signal generator. Do not be afraid to spend

one or two nights getting the receiver "spot on" over the entire range. It is pleasing to have an accurately calibrated receiver. The trimmers and padders should be adjusted as per manual and the "S" meter is a valuable indicating device. In the case of padders encountered bearing the legend "do not touch" adhere strictly to this injunction as these are factory adjusted padders and once set do not need any more attention—this point was driven home vividly to the author on one occasion as rectifying the damage as it were by the owner, due to the movement of one such trimmer, meant several nights of most irritating and boring work to put the matter right.

For the receiver without crystal filter the i.f. can be dealt with by means of a borrowed signal generator, the more accurate the better, but it does not matter if the i.f. is a Kc. or so off so long as they are all aligned to the same i.f. The r.f. end trimmers usually are of sufficient tolerance to allow accurate alignment of the front end to correspond with dials.

A word about switches and cleaning may not be amiss. The author spent most of his life in a part of the world where the local atmosphere consists largely of sulphur dioxide which, when moist, makes sulphuric acid, albeit dilute. The effect on switches and contacts can be imagined. In time a black skin of sulphur compounds would coat the metal with the usual results of bad contacts. The switches would often not respond to treatment with carbon tetrachloride but it was found by experience that a thin coating of sewing machine oil would soften the deposit and allow the contacts to cut through it. This oiling is against most textbook teaching, but it was effective. Many Yaxley type switches are lubricated when installed with a soft grease and this whilst not affecting the electrical efficiency does eliminate wear between the metal surfaces, hence treatment with carbon tetrachloride removes this protective film and wear on the switches is increased. If switches are cleaned then the gentle oiling should follow afterwards and let it be gentle! If the contacts are accessible to the finger smear them with a drop of oil on the tip of the finger. Only a film is needed.

It is hoped these notes will be of assistance to those hesitant about tackling a commercially built receiver. There is no need to be afraid providing you are willing to be patient and careful. The job may be a little tedious, but it is not impossible.

In conclusion, how long is it since you checked your receiver? Even if performing well and it is over 12 months since it was touched, the effort of checking the alignment and re-trimming the r.f. end will not be wasted, and don't forget the old Amateur chestnut—"If you can't hear them, you can't work them!"

VALVE DATA

12BH7

MEDIUM-MU TWIN TRIODE

The Radiotron 12BH7 is a medium-mu twin triode of the 9-pin miniature type used in the vertical deflection circuits of television receivers. In such circuits, one unit of the 12BH7 may be used as the vertical deflection amplifier and the other as the vertical oscillator. This valve is adequate for picture tubes with up to 90° deflection angle, when operated from the boost supply voltage.

The 12BH7 features two similar triode units in one envelope, separate base-pin terminals for each cathode and a centre-tapped heater to permit operation from either a 6.3 volt or 12.6 volt supply.

The valve may be used in other applications including phase-inverter and multivibrator circuits.

Electrical Data

Series Parallel

Heater voltage 12.6 6.3 volts
Heater current 0.3 0.6 amp.

CLASS A1 AMPLIFIER (Each Unit)

Maximum Ratings:
Plate voltage 300* volts
Grid voltage:
Negative bias value 50* volts
Positive bias value 0* volts
Cathode current 20* ma.
Plate dissipation 3.5* watts
Peak heater - cathode voltage:
Heater negative with respect to cathode 200* volts
Heater positive with respect to cathode 200† volts

Characteristics:
Plate voltage 250 volts
Grid voltage -10.5 volts
Amplification factor 16.5
Plate resist. (approx.) 5300 ohms
Transconductance 3100 mhos
Plate current 11.5 ma.
Grid voltage (approx.) for plate current of 10 mA. -23 volts

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings (Each Unit):
D.c. plate voltage 450* volts
Peak positive-pulse plate voltage (absolute maximum) 1500* volts
Peak negative-pulse grid voltage 250* volts
(400)† volts

Cathode current:
Peak 70* ma.
Average 20* ma.

Plate dissipation:
For either plate 3.5* watts
For both plates with both units operating 7.0* watts

Peak heater - cathode voltage:
Peak negative with respect to cathode 200* volts
Peak positive with respect to cathode 200† volts

Maximum Circuit Value:
Grid-circuit resistance:
For cathode-bias, 2.2* megohms.
* Maximum.
† The d.c. component must not exceed 100 volts.

The duration of the voltage pulse must not exceed 15 per cent. of one vertical scanning cycle. In a 625-line, 25-frame system, 15 per cent. of one vertical scanning cycle is 3 milliseconds.
Under no circumstances should this absolute value be exceeded.
As vertical deflection oscillator.

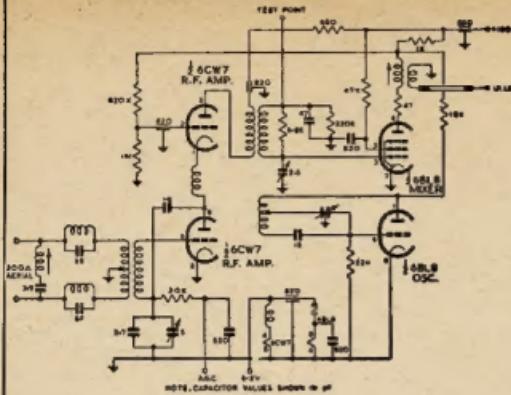
FOR SALE BASE STATION AND 4 MOBILE A.M. UNITS

as new. Owner must switch to F.M.
Selling cheap.

Apply Box A, C/o. Amateur Radio

R.D. CONTEST RESULTS

Owing to last minute delays in checking it is regretted that the results of the R.D. Contest were not available for this issue. They will appear in January.



6CW7
TWIN TRIODE
CASCODE AMPLIFIER

HEATER RATINGS

Vh 6.3V
lh 330mA

CHARACTERISTICS (each section)

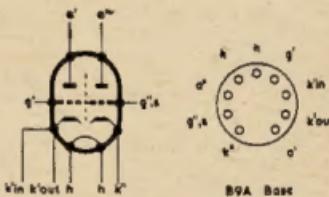
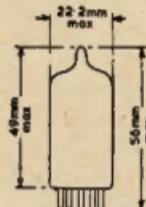
Va 90V
Ia 12mA
Vg - 1.5V
gm 6.0mA/V
u 24
+ Rin 2.0K ohms

* measured at $f = 200$ Mc/s with cathode connections pins 7 and 8 strapped.

The Mullard 6CW7/ECC84 is a double triode specially designed for use as a cascode amplifier in the R.F. stage of television receivers. The first triode is connected as a neutralised grounded cathode amplifier and drives the second triode which is connected in a grounded grid configuration. This arrangement results in a low noise level for the input stage being achieved in the first section, combined with high gain in the second section.

The capacitance between the two triodes is kept to a minimum by an internal shield connected to the grounded grid electrode thus reducing feed back and contributing to stability under AGC conditions. The high gm of 6.0mA/V is obtained with an anode voltage of 90V thus allowing the two triodes to be series connected across a 180V H.T. supply.

Mullard
TELEVISION
VALVE
SERIES



ISSUED BY THE TECHNICAL SERVICE DEPARTMENT

MULLARD-AUSTRALIA PTY. LTD., 35-43 CLARENCE ST., SYDNEY, BX2006. 592 BOURKE ST., MELBOURNE MU2366
ASSOCIATED WITH MULLARD LIMITED, LONDON. MULLARD OVERSEAS LIMITED

Harmonics and Selectivity of Transmitters

PART ONE

WE are used to talking about selectivity as one of the main features of receivers because the ideal receiver would allow only one signal to be detected. Now the shortage of frequencies and the advent of television makes it just as important to introduce selectivity requirements for transmitters, to ensure that only one frequency or one narrow band of frequencies is radiated by a particular transmitter. The receiver lacking in selectivity only means QRM at the receiving location. It may be more serious with a transmitter radiating on many frequencies, for most of these will be outside Amateur bands where the operator has no licence to transmit. Just listen to those Hams in your neighborhood who call "CQ 40" on 20 and 15 metres as well as on 10 metres and even shorter wavelengths. If you have a v.h.f. receiver you will hear some of them as high as 2 metres and even further up the spectrum. The higher your fundamental frequency is, the stronger will be your harmonics. Often you will hear signals from v.f.o.'s and frequency multipliers on lower bands—these signals are not sub-harmonics. These days we don't use the regenerative t.r.f. receiver with 1-3 valves and the Hartley m.o. has also disappeared, but it seems that there have been far more improvements in receiver selectivity than in transmitters.

After describing rather complicated complete receivers and transmitters in "A.R." which included most of the modern means of obtaining the desirable selectivity, it may be interesting to study the fundamentals by discussing some simple measurements which have been carried out with ordinary Amateur gear. If some readers get confused looking at a complete circuit, which is nothing more than an accumulation of many similar components and even nearly identical stages, they should have no trouble in understanding just what a single capacitor and one simple coil is doing.

In the description of the following examples we don't claim to cover the subject completely, nor can we expect a high order of accuracy from the measuring results obtained with simple gear, but the principles are always the same and interesting enough. This article was not written for those radio operators who do not wish to learn what is going on behind the dials and panels of the receiver and transmitter, but it should help us as Radio Amateurs to understand our electronic equipment.

WHERE DO HARMONICS COME FROM?

Harmonics start with the oscillator and each further stage, which does not work as a linear amplifier, contributes to the harmonic content of the output signal.

Test: We used the Amateur band receiver (described in April '56 issue of

"A.R.") which has a calibrated S meter. A short aerial was connected. Various oscillators were placed at such a distance from the receiver that the 3.5 Mc. signal from the oscillators gave a reading of S9 plus 50 db. (30 mivolts). A BC221 frequency meter had a three ft. long antenna, the grid-dip meter used the unshielded coil, and a further e.c.o. frequency meter had a four ft. long test antenna. The signal strength of the harmonics is listed below:

Mc.	BC221	G.D.O.	E.C.O.
1.75	(fundamental)		
3.5	S9+50 db.	S9+50 db.	S9+50 db.
7	S9+50 db.	S9+10 db.	S9
14	S7	S7	S6
21	S8	S6	S4
28	S8	S5	S2

One S unit is a step of 6 db. or a voltage ratio of 1:2.

Compared with the fundamental frequency, the—

2nd harmonic	is down	20-50 db.
4th	"	50-60 db.
	"	(about 1:1,000)
8th	"	50-60 db.
12th	"	50-65 db.

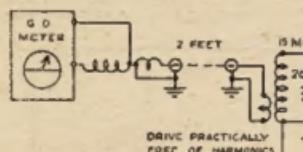


Fig. 1.

The odd harmonics were not checked but some, such as the 3rd, may have been stronger than the second under certain operating conditions. Generally speaking we may say that the position does not seem to be too bad because an antenna coupler and a low-pass filter should provide enough selectivity if the stages following the oscillator do not make things worse. The Clapp or Colpitts oscillators may have less harmonics because the large capacitors could reduce the higher order harmonics to some degree, but a lot depends on the operating conditions of the valve.

HARMONICS FROM THE CLASS C STAGE

L. Retinatti gives some typical figures which are interesting as most of our transmitter stages are operated class C. These figures assume that the class C stage is driven by a harmonic-free signal and that the tuned circuit is replaced by a pure resistor or by a choke which has no resonances or holes over the tested frequency range, so that all harmonics have the same chance.

The harmonics generated by the class C stage alone (non-linear operation, 140° current flow angle) are as follows:—

BY HANS RUCKERT,* VK2AOU

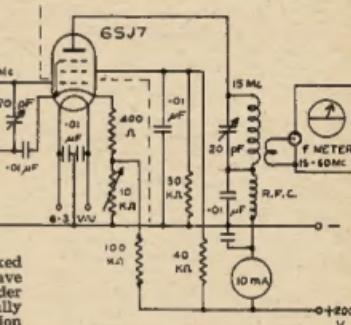
Fundamental and Harmonics	R.F. Current %	db. Power Level
1st	100	4.0
2nd	69.4	-3.2
3rd	30.8	-10.3
4th	5.8	-25.8

Remember that each 10 db. power level change is equal to a power ratio of 1:10.

The amount of harmonic energy generated in a class C stage is quite substantial. The situation will be far worse if the driver stage following the v.f.o. feeds a signal into the p.a. which already contains strong harmonics. It is absolutely clear that one pi-tank in the plate circuit of the class C.p.a. stage has no chance whatsoever of giving us a t.v.i.-proof transmitter or of reducing all harmonics to a level which can be tolerated.

HARMONICS WITH DIFFERENT OPERATING CONDITIONS

When we build our Amateur transmitters we intend to use class C operation in the frequency multiplier, driver



and p.a. stages. This means that the negative grid bias applied is at least twice the voltage required for class B operation (twice cut-off bias). The stages will then work with the highest efficiency. For frequency multiplication we need even more bias to get strong harmonics. Let us now see what our frequency multiplier and p.a. stages are generating when we vary the bias and operating conditions.

It is also interesting to see what effect the tuning of the tank circuit has, as many v.f.o.'s have an output circuit tuned by valve and stray capacities instead of a correctly tuned condenser.

The Test Set-up: As shown in Fig. 1, a grid-dip meter served as the r.f. generator, which did not have strong harmonics. The two link coils, with two feet of co-ax, and the tuned grid circuit reduced the harmonics to a negligible value. This means that any harmonics detected at the plate of the 6SJ7 plate tank had been generated or formed by this stage alone. The grid and plate circuits were well separated

and no regeneration was present. The absorption type frequency meter, mentioned several times before, served as frequency analyser.

The tank circuit was loaded only by the frequency meter and was therefore sharper than with an antenna connected. This test was made mainly to see what harmonics we get (and their relative strengths) when operating a driver or p.a. under various conditions.

No harmonics were detected when operating the stage as a true class A linear stage. When operated as a frequency doubler, the second harmonic became nearly as strong as the fundamental, and all other harmonics increased in power.

In the four cases shown in Table 1, normal class C drive was applied, so that for class A and class AB operation there was far too much. (This is a standard Amateur Radio practice which is wrong!)

Approximate Relative R.F. Voltage of Harmonics (full drive as for usual class C operation)

Fundamental Frequency—15 Mc.

	2nd	3rd	4th
Class	Harm.	Harm.	Harm.
AB	30 Mc.	45 Mc.	60 Mc.
	L. C.	L. C.	L. C.
A	0.30 0.80	0.17 0.08	0.09 0.01
AB	0.64 0.76	0.15 0.15	0.07 0.01
B	0.80 0.60	0.14 0.11	0.05 0.01
C	0.30 0.40	0.10 0.04	0.05 0.05

Table 1.

In all these cases the strongest fundamental signal was observed with the lowest grid bias (class A). The fundamental signal was 10 to 30 times as strong as the strongest harmonic due to the selectivity of the tank circuit. The stage was running with two watts d.c. input.

We see now that even such a small amplifier is capable of generating many millivolts of harmonic energy. How much more must we expect from a 100 watt rig with 800 volts of B+? Even these mV. harmonics could block out your t.v. set if they happen to fall on a picture carrier. We know that in the old days world-wide DX was worked on c.w. with two watts input!

We also see that the high Q tank circuit with the correctly tuned air capacitor (C-table values) will reduce the harmonics more than the L-tuned choke (L-table values). That is why some operators screw out the slugs of their Geloso v.f.o.-exciters and place a 50 pF. air capacitor in parallel to peak the desired signal. This method reduces the harmonics, increases the selectivity and increases the drive.

In the test set-up it was observed that by slightly detuning the tank above or below the 15 Mc. fundamental frequency, changed the harmonic content considerably.

This test shows that we must expect harmonics of volt strength in the tank circuit of any class C final. If the v.f.o. has too much power and the driver not much selectivity (perhaps too much power also), then things must be bad for the p.a., because this stage can and will amplify the whole range of fre-

quencies pumped into its grid circuit. Certain accidental resonances of components, leads and valve capacities often cause higher order harmonics to be amplified with considerable strength.

THE SELECTIVITY OF A TRANSMITTER

We have just seen that we will get strong harmonics in all our transmitter stages. Even if the v.f.o. and driver had a lot of selectivity and were driving the p.a. with a practically harmonic-free voltage, we would get harmonics in the p.a. stage as soon as we use class B or class C operation.

We will now investigate the tuned circuit to see why the tank cannot sort out the harmonics any better. Let us think of the problems in a receiver. In contrast to the receiver, we do not need much selectivity near the resonant frequency, but we do need to suppress any signal from the v.f.o. or doublers (half the transmitted frequency) and also any signal with twice (or more) the frequency of the transmitted signal. To get some idea of the selectivity of tuned circuits far from resonance, we will discuss the results of some practical measurements.

Test One

A single tuned circuit with 30 pF. capacitance working on 14 Mc. was placed between a signal source and a v.t.v.m. so that the tuned circuit was not damped by the measuring set-up (Fig. 2).

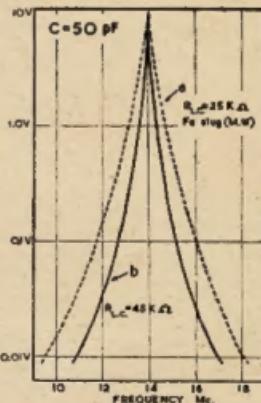


Fig. 2.—Selectivity Curves 14 Mc. Tuned Circuit.

- (a) Image rejection 1:12 (3 x 455 Kc.)
- (b) Image rejection 1:50 (3 x 455 Kc.)

We see that the 10 volt signal at 14 Mc. is attenuated by 60 db. (1,000:1) three megacycles either side of 14 Mc. In other words, there is still 0.01 volt at 11 and 17 Mc. A similar coil with a medium wave iron dust slug is even worse. If we used this circuit in a receiver with a 455 Kc. i.f., the image frequency is only attenuated to one-twelfth of its value. This is why many Amateurs receive broadcast stations in the 14' Mc. band or have W stations appearing twice on 10 metres (near 28

Mc. and again near 29 Mc.). In the actual receiver or transmitter application our tuned circuit is not nearly so selective, because with the higher frequencies decreasing input impedance of valves and the loading of tuned circuits (transmitter plate current, antenna transformation) are lowering the peak of our curve considerably.

Test Two

Fig. 3 shows what happens when we connect a valve and an aerial to our r.f. stage. R.f. stages in receivers and transmitters are similar in principle. Here a r.f. detector receiver was tested. The near resonance selectivity or bandwidth is quite good due to the use of regeneration (phone and c.w. case), but the far-off-resonance selectivity leaves a lot to be desired.

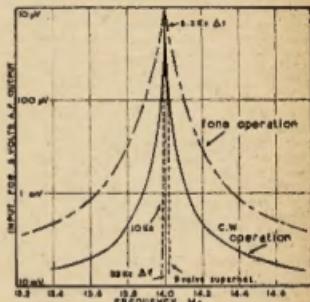


Fig. 3.—R.F. Receiver Selectivity Curves (regenerative detector).

As soon as an incoming signal reaches S9 plus 40 db. or 10 mV., it matters little if the transmitter is 0.5 or many megacycles away in frequency. That is why the r.f. receiver was replaced by the superhet, and is also the reason why our old transmitter with the tank circuit alone between the p.a. and the aerial is attenuating the harmonics only up to a point and everything else is going out, whether it is the 3rd or 20th harmonic. The dotted line in the middle of Fig. 3 indicates the improved selectivity provided by the three band filters of a superhet.

Test Three

Fig. 4 gives the selectivity curves of two superhet receivers the writer built. We see the vast improvement we get with cascades of tuned circuits and band filters. The first superhet, the writer saw (back in 1927) had a true band filter of four or five tuned circuits between the i.f. stages which looked like the low-pass filter now used to reject harmonics of transmitters.

From these receiver examples we draw the conclusion that band filters are the answer to t.v.i. proofing the transmitter in regard to higher selectivity. Shielding of stages and filtering of leads is also required. So band filters between the frequency multipliers and the driver, and between the driver and the p.a. help to sort out the desired signal before we generate high power.

After the p.a. stage we use the tank circuit and an aerial coupler which

form a sort of band filter taking care, to some degree, of those harmonics generated in the final stage.

The low-pass filter has to be added to all those cases where further attenuation of harmonics is necessary. In this way we have a good chance of reducing the higher order harmonics above the cut-off frequency of the low-pass filter which may be set between 35 to 41 Mc. If our p.a. stage is driven by too strong harmonics of frequencies below the cut-off range of the low-pass filter, we may have difficulty in preventing the radiation of low order harmonics such as the second harmonic of 3.8 Mc. (outside our band). When this occurs, the selectivity of the tank circuit is insufficient and an serial coupler may be satisfactory.

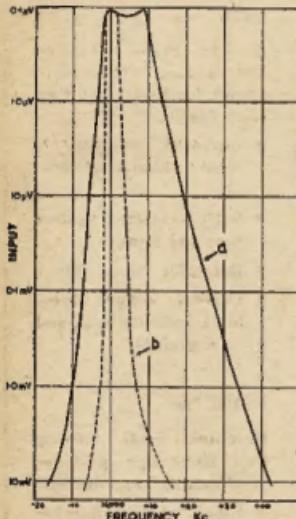


Fig. 4.—Receiver Selectivity Curves.
(a) Nine-valve superhet. Tuned circuits: three at 14,000 Kc, six at 405 Kc.
(b) Eighteen-valve superhet. Tuned circuits: five at 14,000 Kc, seven at 5,300 Kc, nine at 352 Kc, and two crystals at 352 Kc.

Input	Bandwidth Kc.
0.1 uV	10
0.1 mV	31
1.0 mV	64
10 mV	53

BOOKS REVIEWED

THE RADIO AMATEUR OPERATOR'S HANDBOOK—4th Edition, 1957/8

Compiled by the staff of The Radio Constructor in collaboration with The International Short Wave League and published by Data Publications Ltd, 57 Maida Vale, London, W.9, England, this 44 page handbook contains a wealth of information for both Amateurs and Short Wave Listeners.

Amateur Prefixes are listed in alphabetical order of both countries and prefixes, the latter also including a useful record of bands worked or heard.

Provision is also made for a record of Counties of Great Britain heard or worked on various bands and a complete list of Zone Boundaries of the World as originated by Radio Magazines Inc. of New York ("CQ") occupies four pages.

Other sections are Time Conversion, a Mileage Table showing approximate distances from London of over 200 cities and towns throughout the world, Signal Reporting Systems, and a list of QSL Bureaux of the World.

Two short articles on "The V.h.F. Bands" and "Amateur Bands and DX Operating Technique" complete the book.

Our copy received from the publishers and the price is 3/- sterling.

R.C.A. TRANSMITTING TUBES

Published by Radio Corporation of America.

Here is a new edition of a well known book, last published in 1938. The original volume can be seen in many Ham shacks even today.

The book is similar in layout to the familiar Receiving Tube Manual, and lists some one hundred and twenty types of transmitting tubes and transmitter type rectifiers.

Chapters on power tube fundamentals, installation and application, as well as sixteen typical circuits of h.f. and v.h.f. transmitters are featured.

All in all a book every Amateur, Engineer and all others interested in transmitting tubes should have on their book shelf. (Price 13/6 plus 1/- packing and postage.)

Our copy from Technical Book and Magazine Co., 295-299 Swanston St., Melbourne, C.1.

R.C.A. RECEIVING TUBE MANUAL

Published by Radio Corporation of America.

The latest in this series has just come to hand. Coverage has been greatly extended to include the many new tube types recently introduced. It should be noted in the design of new equipment that many tubes widely used prior to 1950 are now being made for renewal purposes only. For this reason the presentation of the older types has been limited to basic data only, allowing greater space for the newer more important types.

The contents include a most interesting chapter on tube application and circuit design, as well as a chart giving full details on all television picture tubes.

This book should prove most valuable to all associated with the design of radio and electronic gear. (Price 10/- plus 1/- postage.)

Our copy from Technical Book and Magazine Co., 295-299 Swanston St., Melbourne, C.1.

COUNCIL OF THE NORTH WEST COUNTY DISTRICT

RADIO SERVICEMAN

Applications, addressed to the undersigned and closing 9 a.m. Monday, 2nd December, 1957, are invited for the position of Radio Serviceman to the Council. Applicants should have a sound knowledge of the theoretical and practical side of radio, including F.M. transmission and receiving equipment to service, install and maintain Council's A.W.A. two-way radio installation. Successful applicant would be required to carry out duties in the Drawing Office and other engineering work if required.

Applicants to state age, qualifications, marital status and when they can take up duties. A house will be made available if required at a reasonable rental. Salary £936 per annum to commence.

N. E. Tighe, Town Clerk.
P.O. Box 184, Inverell, N.S.W.

Seasonal Greetings and
Best Wishes

FROM ALL AT "GLORAD" TO ALL IN HAMDOM.

GLORAD ENGINEERING SERVICES

291a TOORONGA ROAD, MALVERN, S.E.6, VIC. Phone: BY 3774



ZEPHYR MICROPHONES



"THE MICROPHONE THAT SPEAKS FOR ITSELF"

TYPE "80"

A high quality Moving Coil Microphone of striking appearance and fidelity.

- Ideal for transmission of voice or music.
- Good appearance.
- Solid cast case, finished in stoved black enamel, full tilting head.



TYPE "80"
MOVING
COIL



TYPE "40"
RIBBON

TYPE "8XA"

A quality Crystal Insert with "Zephyrfil" filter.

- Durable chrome steel cage.
- Hand or stand pattern.
- Good high frequency response.
- Full tilting head.



TYPE "8XA"
CRYSTAL



TYPE "90"
MOVING
COIL

TYPE "40"

A high grade Studio Microphone, reasonably priced, for those requiring high fidelity.

- Imported magnets, highly efficient generator.
- Fully protected against dust and filings.
- Rotatable cage—360°.
- Chrome copper cage, black bakelite base, and steel gimbals.

TYPE "90"

Precision built Moving Coil Generator provides good quality reproduction.

- Light weight, durable chrome and baked enamel metal case.
- Full tilting head.
- Excellent sensitivity.
- Robust construction.

AUSTRALIAN MADE — — FOR AUSTRALIAN CONDITIONS

Manufactured by—

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, VIC.

Phone: BL 1300

Phone: BL 1300

AVAILABLE FROM ALL LEADING TRADE HOUSES

AMATEUR CALL SIGNS

AUGUST AND SEPTEMBER, 1957

NEW CALL SIGNS

VK— Australian Capital Territory
 12AH—A. J. Roberts, 30 Dawes St, Kingston.
 New South Wales
 2BD—E. M. Bailey, Eungella, via Murwillumbah.
 2DM—D. A. Macaskill, 82 Vernon Ave, East Lakes.
 2DN—A. J. Harper, Lot 20 Richmond Rd, Kingsford.
 2LA—L. A. Lawson, 12 Charleville Rd, Wagga Wagga.
 2NA—N. T. Durham, "Shangri-la," Rickard Rd, Warrnambool.
 2RI—G. O. Hoyle, 32 Manners St, Tenterfield.
 2TI—R. H. Trick, 18 Wakehurst Parkway, Sessforth.
 2VV—R. M. Maraden, 43 Houston Rd, Kingsford.
 2AKZ—C. D. Bennett, Electrical Engineering Dept, Sydney University.
 2AND—B. H. Anderson, 14 Stuart St, Longueville.
 2ASG—R. F. Jorgensen, 142 Edinburgh Rd, Castlecrag.
 2AZK—G. R. Stewart, 33 Bon Accord Ave, Bondi Junction.
 2CK—R. R. M. Whitslaw, 88 Church St, Croydon.
 2CZI—J. Dempsey, P.O. Box 232, Leeton.
 2CZG—R. E. Clarke, P.O. Box 8, ...
 2EEB—R. E. Birtley, 101 Burns Bay Rd, Lane Cove.
 2ZJA—N. H. Stanley, 15 Morris St, Birmingham Gardens.

Victoria

3HI—M. A. Trall, 38 Argyle St, New, E4.
 3HL—H. Martin, 28 Sturt St, South Caulfield.
 3NV—A. B. Ayling, 48 Emily St, Murrumbeena.
 3VG—R. A. F. School of Radio, Radio Club, R.A.A.F. School of Radio, Ballarat.
 3VK—M. J. Spiller, 46 Maling Rd, Canterbury.
 3ZE—B. E. McMillan, 301 McMillan Rd, Melbourne.
 3AOL—B. E. Lloyd, 40 Westgate St, Oakleigh.
 3ZED—K. C. Oldroyd, 515 Waterdale Rd, West Heidelberg.
 3ZFL—L. J. Long, 22 Bladen Ave, Brunswick.
 3ZFP—O. P. Fudges, 85 Elliott Ave, Carnegie.

Queensland

4AE—R.A.A.F. Radio Club, R.A.A.F. Station, Garbutt, Townsville.
 4BN—W. S. Beany, 8 Sirius St, Coorparoo.
 4EF—P. W. Bowdier, 58 Swinburne St, Lutwyche.
 4CW—K. C. Wockett, 17 Hunter St, Mackay.
 4LF—L. S. Dixon, 34 John St, Redcliffe.
 4NL—L. S. Sharp, 18 Carl St, Buranda.
 4ZAZ—J. L. C. Bickford, Des St, Mt. Morgan.
 4ZYB—J. K. Fuller, 31 Maple St, Wavell Heights.

South Australia

5AW—D. A. Cartwright, Penola.
 5W—F. Cooper, 31 Bettams Rd, Rayton Park.
 5DE—R. W. Washington, 46 Swaine Ave, Rose Park.
 5OB—L. O. C. Baker, Building 204, R.A.A.F. Edinburgh.
 5DZY—R. E. Smith, 61 3rd Avenue, Sefton Park Rd, Elizabeth South.
 5ZXY—C. G. Luke, 16 Kennaway St, Tumut.

Western Australia

6AB—A. R. Ward, 44 Ulstead Rd, Mt Pleasant.
 6HG—G. C. High, James St, Cannington.
 6SC—B. S. Sennett, C/o S.A.M. Broadcasting Station, Northam.
 6ZAI—A. J. McCarthy, 81 Napier St, Cottesloe.
 6ZAU—W. R. Cooper, 21 Watson Place, Maylands.
 6ZDP—F. M. B. Fagot, Upland St, Wagin.
 6ZBU—J. Burrows, 140 Fletcher St, Subiaco.

Tasmania

7ZAK—M. J. Watson, 82 Lochner St, Hobart.
 7ZB—New Guinea and Other Islands
 8EP—E. P. Black, C/o P.M.G.'s Dept, Single Quarters, Radio BPA, Port Moresby.
 8LJ—L. J. Earp, C/o Dept of Civil Aviation, Coco Island.
 8RD—R. G. Donavan (Mrs.), Station: Allotment 22 Section 43, Borella, Port Moresby; Postal: C/o P.O. Port Moresby.
 8SB—D. S. Brown, C/o Posts and Telegraphs, Port Moresby.
 8ZAN—A. D. Nutt, Ruggi, via McHughan, T.N.G.
 8ZB—Antarctica
 8AT—E. S. Trigwell, Davis, Antarctica.
 8KT—E. G. Heinrichs, Macquarie Island.
 8PC—P. E. Clemence, Davis, Antarctica.
 8PT—P. B. Turner, Davis, Antarctica.

CHANGES OF ADDRESS

VK— Australian Capital Territory
 1ACU—A. Morris-Reed, C/o. Reid House, Canberra.

New South Wales

3CD/T—C. Preston-Smith, 49 Tobruk Ave, Cremorne.
 3IT—W. R. Beveridge, 18 Murdoch Ave, Turramurra.
 3MU—L. J. Case, 68 Mercury St, Beverley Hills.
 3VW—R. Jones, 36 Culane St, Concord West.
 3NE—D. E. Melbourne, "Kuranda," Honour St, Lawson.
 3OY—J. C. A. Young, 41 Meppunda St, Concord West.
 3SG—S. Z. Molen, 17 Margaret St, Strathfield.
 3TJ—J. W. Thompson, 39 Walli Ave, Earlwood.
 3UH—N. G. Hansen, "Hazelhurst," Murdoch Ave, Cremorne.
 3AGM—W. C. Berry, 29 Norton St, Balmain.
 3ARJ—G. C. Paterson, 33 Beswick Ave, North Ryde.
 3AIZ—E. G. Powell, 156 Moorefields Rd, Kingsford.
 3AJ5—E. J. Smyth, 41 Ordnance Ave, Lithgow.
 3AMN—H. D. Martin, 338 Chloride St, Broken Hill.
 3ANL—J. B. Doran, 185 Lockyer St, Adamstown.
 3APA—P. F. Ashby, 1745 Pittwater Rd, Menai Vale.
 3ARU—F. N. Sizemore, 2 Bourke St, Botany.
 3ASZ—R. L. Lear, 40 Brisbane St, St. Marys.
 3AV/T—W. B. Jones, 65 William St, Bankstown.
 3AWW—G. D. Whiston, 738 Anzac Pde, Kingsford.
 3AXS—E. Carruthers, Radio Branch, Tasmania.
 3AWX—W. H. Hannan, 2 Merley Rd, Strathfield.
 3ZAW—R. S. Salinger, 5 Rickard St, Balgowlah.
 3ZBB—G. P. Pearson, 2 Kethel Rd, Cheltenham.

Victoria

3BU—W. A. Brownhill, 75 Gheringhap St, Geelong.
 3GU—H. Chapman, Flat 22, "Lorns Court," 81 Malvern Rd, Ivanhoe.
 3HJ—D. J. Twigg, 8 Kennedy St, Glenroy.
 3IR—M. J. Macarone, 37 Tanty Ave, Mornington.
 3PQ—J. E. M. Wilkinson, Lot 234 William St, Thomastown.
 3QU—C. H. Birmingham, 26 Perth Ave, Albion.
 3SU—S. G. Edwards, R.A.A.F. School of Wireless, Ballarat.
 3VH—L. W. Hoobin, 55 Reserve Rd, Beaumaris.
 3WQ—C. C. Charnside, 8 Blake St, Caulfield.
 3AF—J. Cart, St. Collins St, Mentone.
 3AKD—A. K. Fielden, 41 Pakenham Rd, Ashburton.
 3ZAK—E. R. Kelly, Cottage No. 3, Radio Australia, Shepparton.
 3ZBY—A. L. Morrison, "Kilkenny," Eltham.
 3ZCH—J. Howden, 235 Elgar Rd, Box Hill.
 3ZDD—J. E. E. Day, James St, Pakenham East.

Queensland

4HM—H. J. Murphy, 476 Stafford Rd, Stafford, N.I.D.

4ZAG—J. C. E. D'Anton, Callaghan Rd, Narragga.

South Australia

5RE—H. Horncraft, 48 Beulah St, Linden Park.
 5UZ—H. K. E. Brock, 44 Asquith St, Nairne.
 5VC—J. G. Mason, 15 New St, South Plympton.
 5WA—C. J. Wooldridge, Hill St, O'Sullivan's Beach, via Morphett Vale.

5ZED—C. Taylor, 18 Rowland Rd, Magill.

Western Australia

6AJ—A. J. Jeffery, 8 Harper St, South Perth.
 6DF—M. A. Du Feu, 14 Kildara Rd, Forest Park.
 6EE—R. R. Elkin, 38 High St, Fremantle.
 6ZRA—J. Bartlett, 48 Grafton St, Bayswater.

Tasmania

7DW—D. M. Watson, 35 Coruna Rd, Lindisfarne.
 7SD—D. M. Smith, 15 August Rd, New Town.
 7TR—R. E. Conrad, Mary Hope Rd, Berriedale.

Papua-New Guinea

8TZ—C. D'Evynnes, Ruggi, via Mount Hagen, Lee, N.G.

CANCELLED CALL SIGNS

VK— New South Wales
 2DZ—C. H. Kindness.
 2FK—T. W. Kindness.
 2GR—T. Storer.
 2MV—C. W. Welsh.
 2AAF—A. J. Fisher.
 2ACV—A. C. Murchay.
 2AR—R. J. Murphy.
 2ANQ—D. Watson.
 2ZBN—A. D. Nutt, Now VK2ZAN.
 2ZBS—W. J. Stewart.
 2ZCR—R. M. Maraden, Now VK3VV.

Victoria

3QG—C. Preston-Smith, Now VK3DM/T.
 3QH—M. G. O. Nielsen.
 3AMF—R. J. Power, Now VK3AJZ.
 3AQH—L. W. Hoobin, Now VK3HZ.
 3ZCL—A. Trall, Now VK3EI.
 3ZEB—S. J. Weston, Now VK3ZE.

Queensland

4ZAS—L. L. Sharp, Now VK4NS.

South Australia

5CW—W. R. Clifton.
 5EW—E. W. Evans.
 5FA—F. B. Anderson.
 5IN—D. S. Poole.
 5SD—D. S. Brown, Now VK5SB.
 5WB—W. S. Beany, Now VK4BN.
 5YL—L. Lindley.
 5ZAM—D. A. Cartwright, Now VK3AW.
 5ZDF—R. A. Washington, Now VK3DE.

Western Australia

6ZAF—L. K. Karp, Now VK4ZE.

Tasmania

7BK—S. G. Kitchen (Capt.).
 7WN—W. R. Ion, Now VK3IAO.

Papua-New Guinea

8LW—L. J. Wright.
 8MF—F. M. Nolan.

8YG—G. E. Smith. Transferred to Victoria.

Duralumin Aluminium Alloy Tubing for Radio Aerials

★ LIGHT ★ STRONG ★ NON-CORROSIVE STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS $\frac{1}{4}$ TO 3"

RECOMMENDED FOR TELEVISION AND BEAM AERIALS

Price List on Request

STOCKISTS OF SHEETS—ALL SIZES AND GAUGES

GUNNERSEN ALLEN METALS

PTY. LTD.

88-92 YARRA BANK ROAD, SOUTH MELBOURNE

Phone: MX 4624 (9 lines)

Telegrams: "Metals," Melbourne.

DELEGATE FOR I.T.U. CONFERENCE

Matter Raised in Federal Parliament

Now that members are giving earnest consideration to sending an Amateur representative to the next I.T.U. Conference at Geneva in 1959, it is interesting to read the following extract from "Hansard" (Senate, 30th October, 1957).

Senator Hannan: "I wish to refer to the Postmaster-General's Department. This department is responsible for the licensing and control of all radio communications in this country. In particular, I refer to the control of amateur radio operators. Part of the function of the department is to keep a watch on the operating frequencies to see that amateurs operate within the prescribed power limit, which is 100 watts in this country. Other countries seem to trust their amateurs more. New Zealand allows them 250 watts and the United States allows them 1,000 watts.

"The matter on which I seek assistance involves the International Telecommunications Union, which determines the radio frequencies used throughout the world. It meets about every five years and the next meeting will be at Geneva in 1959. On a governmental and an organisational level—two distinct levels—the nations will allot the frequencies which amateurs and others may use. The Wireless Institute of Australia represents the radio

amateurs of this country. The cost of sending a delegate from Australia to the conference at Geneva is estimated to be £1,500. In view of the extraordinary contribution that these men make to the national well-being in peace and in war, will the Minister examine the possibility of providing assistance on a £1-for-£1 basis to send a delegate to Geneva? The Minister for Repatriation (Senator Cooper), who represents the Postmaster-General in this chamber, and indeed the Postmaster-General (Mr. Davidson) himself, have been remarkably sympathetic to this fraternity in the past.

"I emphasise the need for their good offices at the moment by indicating that at present the 20, 40 and 80 metre bands, which are the normal bands of communication for amateurs, are being used by what are known as intruders or commercial pirates. When a commercial organisation infringes frequencies belonging to amateurs, the only redress available to the amateurs is through the government of the country concerned. They have no legal standing to enforce their rights. Therefore, I ask the Minister to consider providing assistance to send a delegate to this important conference so that these men may have reasonable protection for their hard-won rights."

Amendments to National Field Day Rules for 1958

These amendments are based on suggestions from the Division

1. There shall be six sections to the Contest—
(a) Single operator portable and mobile transmitting phone.
(b) Single operator portable and mobile transmitting e.w.
(c) Single operator portable and mobile transmitting open.
(d) Multiple operator portable and mobile transmitting.
(e) Fixed stations working to portable and mobile stations.
(f) Reception of portable and mobile stations.

SCORING TABLE

Portable and Mobile Stations:

(a) For contacts with fixed stations within the competitor's own State **2 points**.
(b) For contacts with fixed stations outside the competitor's own State **3 points**.
(c) For contacts with other portable or mobile stations within the same State **5 points**.
(d) For contacts with other portable or mobile stations outside the competitor's own State, **10 points**.

Rule 2 (last paragraph):

Extend so that it may read: "... except in the case of stations entering for the multiple operator section, where several bands may be used simultaneously."

PUBLIC SERVICE

Papua and New Guinea

VACANCIES

DEPARTMENT OF POSTS AND TELEGRAPHS

SENIOR RADIO TELEGRAPHIST—£1258-1318 p.a. (2 positions)

QUALIFICATIONS.—First Class Certificate of Proficiency (P.M.G.) or equivalent; ability transmit at 25 w.p.m. and use typewriter for reception radiograms at 30 w.p.m.; two years' commercial experience desirable, preferably in coastal radio or marine service, ability control and train staff.

RADIO TELEGRAPHIST—£988-1198 p.a. (2 positions)

QUALIFICATIONS.—Second Class Certificate of Proficiency (P.M.G.) or equivalent; ability transmit at 25 w.p.m. and use typewriter for reception of radiograms at 30 w.p.m.; one year's commercial experience desirable.

SENIOR TECHNICIAN—£1258-1318 p.a.

QUALIFICATIONS.—P.M.G. Senior Technician (Telecom) or equivalent; automatic and manual telephone experience

DUTIES.—Install and maintain equipment at main exchange or in charge small district.

GENERAL INFORMATION

SALARY—Rates quoted are actual for unmarried appointees and include allowances and adjustments. Married officers receive a further £12 p.m. Additional Territorial allowance of £10 p.a. after 5 years' service and a further £25 p.a. after 10 years' service is also payable. Minimum rate applicable to unmarried men is £250 p.a.

ELIGIBILITY.—Adult male British subjects under 45 years.

APPOINTMENT.—Permanent subject to satisfactory probationary period.

LOCATION.—Appointees are required to serve anywhere in the Territory.

ACCOMMODATION.—Single quarters only available. Married accommodation not available under 21 months from date of appointment.

SEPARATION ALLOWANCE.—Payable at discretion of Territory Administration designed to compensate for added expense of married appointees' children under 16 years of age.

LEAVE.—Three months after 21 months in Territory. Additional 3 months' leave after each 6 years' service and 6 months' furlough after 20 years' service.

TAXATION.—Income derived by residents of Territory from sources within the Territory, is not at present taxable under Commonwealth legislation.

FURTHER INFORMATION.—An information handbook on the Public Service of the Territory is available from the Department of Territories, Canberra, or Sydney, or from any Commonwealth Public Service Office, or the Employment Office of official country Post Office. Other enquiries to Department of Territories, Canberra (phone UU11, Ext. 294).

APPLICATIONS.—Submit on prescribed form available from Offices of Territories, Canberra, by 31st December, 1957.

YL CORNER

BY PHYL MONCUR*

WHAT IS A HARMONIC?

A harmonic is the son of a Ham who for the first few months of his life squalls with all the piercing intensity of a solid heterodyne. Between the ages of two and four he spends his time turning Dad's switches on and off and shouting "Dad, you're *beepin'*!"

At six he builds his first wireless set. The cabinet from a fruit case, the coils are springs from an old couch, for the dial he uses the face of a broken alarm clock, and Mum's soap dish is just the thing for a microphone.

At eight he still has the fruit case but has added a broken telephone dial, some historic condensers which somehow or other Dad has managed to part with, and Dad also graciously gives him a couple of burnt-out tubes.

At 13 he really starts building; he rewinds a burnt out transformer and attempts making a variable condenser from ends of jam tins he's been saving up. He's getting the bug fast, he's Dad's pal and Dad is as proud as a peacock.

At 14 he's at the experimental stage. He's doing science at school and he tries making a battery with Mum's preserve jars and some strips of lead he's removed, unbeknown to Grandma, from the slate roof up at her place. He's had a fit of questions, at first they're quiet, within Dad's scope but it's not long before he's got Dad guessing and we find Dad secretly swatting up text books so as not to spoil his prestige.

At 15 he's reading is completely comprised of radio books. He reads with disdain such things as cowboy yarns, thrillers, and the movies. Girls are most definitely taboo. His bedroom is fast becoming the second shack in the house and pieces of radio gear are to be found all up in his wardrobe, in his cupboard, all mixed up with his clothes, in his bed, and side cutters and pliers can often be found even in his bed. Mum is going through it all for the second time in her life but somehow, being so well seasoned, is more tolerant. The time and takes time off to appreciate the fact that bodgees do not come in this category.

At 17 he masters the code and shames Dad by sending it much faster than Dad can receive.

At 18 he sets his licence and really digs into the building side of radio, but unfortunately for Dad he's always short of cash and is continually borrowing parts of Dad's gear and when Dad wants to go on the air he has to go on a bear and take them back again. He gets interested in v.h.f. and now Dad has Q88/45 to try out a new rig he's built up. He switches it on and up goes Dad's Q88. Having got his licence he feels he knows everything there is to know about radio and proceeds to educate Dad in the theory of this science. There is no Ham of whatever vintage or experience could possibly know as much about radio as he does when he's 18. To him poor old Dad is just plain dumb, his own knowledge, he feels, is just so far beyond that of his father.

By the time he's 22, Dad reluctantly begins to admit that perhaps he's right!

* 235 Union Road, Ascot Vale, Vic.

"OK DX CONTEST 1957"

International C.W. Competition

On the occasion of its fifth anniversary the Czechoslovak Central Radio Club invites foreign Amateurs to take part in the 1st International C.W. DX Competition— "OK DX Contest 1957".

CONTEST RULES

1. Stations participating in this contest will contact stations of other foreign countries, the countries to be understood as per the "Official List of Countries for the DX C.C."

2. Contacts between stations of the same country as well as repeated contacts with the same station will not be counted.

3. The contest period starts on 0000 G.M.T and ends at 1200 G.M.T. December 8, 1957. Bands used are 3.5, 7, 14, 21 and 28 Mc.

3. Stations participating in the Contest will earn "Test OK".

4. Stations will send six digit numbers indicating the signal report (RST) and the current number of the contact, starting from 001. Contact must be numbered consequently irrespective of the bands used.

5. One point is earned upon sending an exchange and two points upon receiving an exchange, an exchange being defined as can be earned for a complete contact. Contacts with Czechoslovak stations earn double value of points.

6. Contests worked during the Contest list Europe, Asia, Africa, North America, South America and Oceania as well as the South Pole. The multipliers are considered for each band separately and, consequently, the maximum attainable number of multipliers is 30.

7. Entries may be made in one of the two classifications: (a) Single-operator stations, (b) Multiple-operator stations. Multiple-operator stations require obtaining assistance, such as monitoring other bands, keeping the station log and records, etc.

Each station will state in its log whether entry should be made for (a) One band operation (in this case the log data from other bands will serve for inspection only), (b) All bands used by the station during the Contest.

8. Separate logs must be used for each band. The logs should contain the following data: Date, time, station worked, exchange sent, exchange received, points, multipliers and other data as stated above.

The logs should include the following statement: "Herewith I declare that I have observed the rules of this Contest as well as the regulations of the Licensing authority in my country, and that all the data stated in this log are true".

9. Stations of the two separate classifications which have achieved top scores on individual bands and on several bands, respectively, will be awarded a certificate and a flag, while two further stations will be awarded a certificate.

In addition, a list of records of stations in individual countries will be prepared, and the first station of each country will be awarded a certificate.

10. (a) Stations which contact 100 different Czechoslovak stations will obtain the "100 OK Award". (b) Stations participating in the Contest may obtain the "1955 Award" in recognition of their efforts. All participants: no special endorsements will be placed on these awards if all continents have been worked on a single band.

No confirmation is necessary for the awards as the contacts will be verified from the logs of other participants.

11. Logs should be sent to the Czechoslovak Central Radio Club, Box 68, Prague 8, Czechoslovakia. Logs must be mailed not later than 13th Jan., 1958.

12. Decisions of the Award Committee are final.

W.I.C.E.N. NOTES

The new title proposed for C.D.E.N. has now been accepted and preparations are well in hand for the printing of the Authorisation Cards.

The advent of Sputnik I and II, demonstrated conclusively the speed and efficiency with which Amateurs rise to the occasion whenever necessary. We "dip our lids" to all who took part. Furthermore, the important part the Amateurs can and will play in I.Q.Y activities has now been forcefully brought home to those who were very doubtful of his reliability and worth.

One point of interest activity clearly demonstrated was how important it is for Amateurs to learn to abide by a strict operating procedure and cease engaging in unnecessary chatter. The latter feature was responsible for slowing down correlation of information during the first few days of the Sputniks. We must not let this become a habit. We must learn to be brief but concise reports and "cut" should be the goal for which we should all strive, thus ensuring that the maximum information is passed in the minimum time. Practice and more practice is the obvious way to achieve the desired result.

One question which arose from the publication in August "A.R." of section 1 of Instructions to W.I.C.E.N. Operators was regarding the frequencies 3503 and 7069 Kc.

Answer: These frequencies were chosen as national guard frequency for W.I.C.E.N. after consultation with the Amateur Administration. In the interest of safety they should be strictly limited to the same manner as Air and Maritime Services maintain close watch on international guard frequencies.

Change to local network frequency should only be made after contact has been established. Under no circumstances should guard frequency be used for traffic handling; however, should more assistance be required, it should be sought by calling on guard frequencies.

We cannot stress too strongly the necessity of putting the welfare of W.I.C.E.N. as whole before local beliefs and customs.

In order for W.I.C.E.N. to be accepted by the community as a vital force, it must operate in principle as a national body not as a number of isolated groups. Naturally in times of emergency it will be necessary to implement rules on the spot, but in so doing we will follow the basic pattern laid down in the rules we will achieve much better results and greater recognition.

They're all at U.R.D.

Here we show you just a FEW of the famous brand names available from our new Warehouse in the Hi-Fidelity, TV, Electronics and Electrical field.

Orders and enquiries will be given prompt, courteous attention.



UNITED RADIO DISTRIBUTORS PTY. LTD
175 PHILLIP STREET, SYDNEY. BL 3954. BOX 3456, G.P.O.



The Season's
Greetings
to all our Customers

Deck out the Walls with Garlands gay,
And let the kindly laughter play,
Hear the Chimes so sweetly sounding,
Christmas happiness abounding,
All that's good and true be thine,
At this merry festive time.



RADIOTRON

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.
47 York Street, Sydney.

were as big as grasshoppers, so he says! Once again we returned to Jack's QTH where Mrs. 4JO had a very nice supper waiting. Once again many thanks for your understanding of the inner man, Mrs. Rose, it is truly appreciated. A discussion of the newly released 8 band ham bands was held when some of the boys inspected John's new G4ZU band next door.

Quite a few of the boys have reported hearing JAs, the band has been wide open on occasions. Stimulus enough!

The next tx hunt will, as usual, be held on the first Friday of December. Merry Xmas all - 82A

SOUTH AUSTRALIA

Which VK5 will be the first to break 4LK's record of 12 JAs on one day? Congrats fellow, it must have been a thrill.

Master Sputnik brought quite a bit of favourable publicity to a number of both h.f. and v.h.f. types, and the means of sending quite a bit of activity. Let's hope that since the 108 Mc frequency will be used and the gear prepared for it brought into service. What with space ships high sunspot counts with moonbow m.u., there is a busy time for v.h.f. here.

It would not be right to omit some details of how one well known "all-band" type worked to get back on 8 m. Like a lot of others, he is a mix gear, including the 4+6 beam, was disassembled, painted, and then given a coat of spider webs, to cut it all clean. Dust removed, crystal located and first of all the converter put back into service no signals heard on it, but functioning well on ignition QRM, and a real mess on electrically coupled receivers. Now item the 12. Now being in a hurry to get back on, a very hasty broadband layout was decided upon, starting with an XYZ tube that looks like a 15AT7 into a mystery tube that looks like a 15BZ7. The 15BZ7 is at 30w. Input coils and decoupling runups by the book, use of grid dipper and right on the nose, wiring checked OK, a.c. switched on and voltages appeared normal—but no 8! After frantic searching, the 15BZ7, the plate, the screen, etc. and generally wasting lot of time, finally covered there was no signal in the holder. Who swiped it? That's the 100 dollar question and who are we talking about in the other No. No, not me, but my nearest neighbour Ham and was he not the one who nearly re-vamped his 6 m gear in disgust.

John ZB2A has his 6 m gear going using a line-up of 8G6, 12A6, 833 tripler, 2291 final, 100w. 400w. on the plates and 180w. on the screen with a 15BZ7. 100w. on the 15BZ7 as a diode monitor from the output.

Kathy SMT not far behind, but he is being generous in giving away most of his 6 m gear (for conversion to the h.f. bands above 10 m), so found he had to start from scratch. It took about 30 min. to get it there and in passing, a little bird told me to put my beams in order at 11 p.m. one night right.

Hughie SBC heard again quite consistently on 8, passed his QTH quite recently and really envy that location. A perfect spot for take off in any direction, so we are expecting great things from you my friend—827.

WESTERN AUSTRALIA

The Oct. meeting of the Group was held on Sat. Oct. 5, at D.C.A. as usual. Very welcome visitors were Geo. SOH, Dave SWT and Ken ATB. The lecture for the evening was given by Mr. John Hart of D.C.A. and Klystrons. Mr. Hart gave us a good insight into the construction and working of these valves complete with slides showing exploded views of the different sections of the Klystron. Afterwards in the workshop we saw a Klystron working and also explored the various bits of gear and equipment that are used by D.C.A. We are very much indebted to Mr. Hart for his very fine lecture and also to Mr. Geo. Range of D.C.A., who made the whole evening possible.

Meeting nights have been changed from Saturday nights to the fourth Monday night in the month. This should help a lot of members who have been unable to attend on Saturday nights.

The fox hunt was held on Sat. Oct. 26. The fox was an unknown quantity, and to cut a long story short, the tx was found hidden under a hedge and the beam was suspended under the bridge and firing down the valley. John GCU was the culprit.

The first Monday night meeting was held on Sat. Oct. 27, and the attendance showed improvement. Harry 02ZB and his wife made very welcome. Members enjoyed a color film taken by Jack 02ZB and his XYL. Many of a trip by road to Geraldton and included spear fishing, beautiful flowers and shots of the cray fish industry. Many thanks Jack—02ZB.

S.W.L. SECTION*

To begin this month's notes I must say how sorry I was to see no notes appeared in last month's issue of "A.R." The reason for this was that I had not been able to get the necessary money so did not feel inclined to prepare any notes with such little support from other x.w.l.'s. So if you wish to see this section in the magazine, continue regularly to put your pen to paper and let me know about your activities.

SHORT WAVE LISTENERS' GROUPS

Recently a circular was forwarded to the Council of each Division of the Wireless Institute under the sponsorship of the Victorian Division Council by the Victorian Division Group. These Groups can only be conducted on a Divisional basis and it is not practical for a Group to admit members from within another Division. The Victorian Group, bearing this in mind, suggested in the circular that Groups be formed in each Division. So far, to the best of our knowledge, Groups have been formed in the Victorian, South Australian and Papua-New Guinea Divisions, the latter of which we have heard very little. However, we have been informed that a Group may soon be formed in Tasmania and we wish that Division much success in this project.

We also hope to hear of a similar move from the other Divisions. So if you are interested in the formation of a Group within your Division, why not write to your Divisional Secretary and let him know of your interest? If you do this it may help your Divisional Committee in deciding whether or not a Group will be worthwhile and assist them in ideas of what interest may be taken. The names and addresses of the office-bearers of each Division are published elsewhere in this issue.

NEW SOUTH WALES

The only letter received from N.S.W. this month is from Ken Goodwin. Very pleased to hear from you Ken. He requests information as to how he can join an a.w.l. group. That is up to your Divisional Ken. I suggest you act on my suggestion above. Ken is obtaining a short wave which needs some work done on it, so looks like being busy for a while. Hope you get it going OK. We'll be pleased to hear how you get on.

WISCONSIN

October Group Meeting.—At this meeting we were pleased to welcome a newcomer, G.H. Robinson, who we hope to see more of in the future. The report of the Group President for both the past year's activities and for the year to date was given by Michael Ide, Vice-President. Michael Ide, as the President, Len Poynter, was unable to be with us for this meeting. After business was concluded we were presented with the most interesting talk which was on finding a new career. Mr. Ide's talk was accompanied by a demonstration on an actual faulty set at which Michael had been left in his capacity as a suburban

*Compiled by Ian J. Hunt, WIA-L2907, 211 St. George's Road, Northcote, N.16, Vic.

Wireless Institute of Australia Victorian Division

A.O.C.P. CLASS

commences

MONDAY, 3rd FEB., 1958

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—Secretary W.I.A., Victorian Division, 191 Queen Street, Melbourne (Phone: MY 1087) or the Class Manager on either of the above evenings.

servicemen in repair. The lecture proved most interesting and we thank Michael for his efforts. Incidentally, the owner of the faulty receiver sure got his money's worth as the set was gone over with a fine tooth comb. After the lecture was concluded we received a demonstration of JWL in action, being operated by our Council representative, George SWJ. Thanks for providing this very interesting item, George.

Greg Gossip, The President, Len Poynter, and Astor McCorquodale, M.C. were duly congratulated on the arrival of the ham radio. These two hearty members were recently seen at one of the Division's general meetings having apparently talked their respective XYLs into allowing them a night off from washing the radio. They were then invited to a Group Meeting night. By all accounts they enjoyed themselves and might try it again soon.

John McClusky also merits our congrats on having obtained his A.O.C.P. Another worthwhile effort recently was that of David Gossip who by consistent listening was instrumental in aiding in the location of a "pirate" station on the Ham bands. Good work David. Frank Nolan and Geoff Morris are still quite strong. The Group Chairman Group Reporter whilst Ian Hunt has increased his countries heard total to 183 with UR2 Estonia and UR1 Pitcairn is, the latest two.

Plans entertained by the proposed section of members have been to the building and buying of bigger, better or more equipment. Max Hilliard is currently constructing beams for 80 and 144 Mc and is eagerly awaiting the arrival of an Eddystone 888 rx.

SOUTH AUSTRALIA

Sept. and Oct. Group Meetings.—The Sept. meeting of the VK5 boys took the form of a visit to the Central Telephone Exchange where they had a very interesting time. Thanks go to Arthur Hall for arranging this. The Group has shown a slight increase in membership and hope to be able to arrange a full programme of events to stimulate interest in the near future. A recent listening session held by the Group was with Doug Gras, to whom we extend our congratulations.

John Campbell is busy studying for exams and Jim Potts is therefore handed on the following information: The Oct. meeting proved most interesting with a talk by Jim on "The Early Days of Amateur Radio in South Australia". He described early tx's and rx's and told of the many difficulties which faced the Ham during the period he was preparing to get on the air. The boys thank you very much for your talk Doc. OK.

DECEMBER MEETINGS

The December meeting of the VK5 Group will be held on Tuesday, 10th, when members will be combining with the rest of the Division for the Annual Christmas "Do". This will be a popular function and no doubt a.w.l. members will assist efficiently in the disposal of the sumptuous repast provided for the occasion. Thanks for writing and letting us know all about the meeting Jim, and we hope to hear from you again soon.

To return to VK5 activities again I would like as many members as possible to turn up at the December meeting of the Group. This meeting will take the form of an informal get-together and will give all the opportunity to earash some other poor a.w.l. about your achievements.

I would like to thank all who have made my year easier by contributing to these notes during the past year. May the Christmas Season be one of blessing and peace to all who may read this page and the New Year one of health, happiness and useful achievement.

UNIFORMS DUST COATS

for your Office Staff, Factory,
Workshop, Servicemen.

★
Bowls Frocks, Tennis Frocks,
for the retail trade.

★
D. MILBURN & CO.
238 Flinders Lane, Melbourne



THE
FAMOUS
GELOSO
V.F.O.
UNIT

available for
immediate
delivery

£10/4/9
(inc. tax)
Freight Extra

The variable frequency oscillator that Geloso have designed for their transmitter type Q210-TR is now available as a separate unit. The importance of a stable oscillator in a transmitter is well known to Hams for it depends the stability of the transmitted signal which is a very necessary requirement of all transmitting stations. In order to obtain maximum stability one may resort to the use of multiple quartz crystals but it is easier, cheaper and more convenient to use a Variable Frequency Oscillator. This oscillator also provides a means of quick frequency changing to any part of the amateur bands and so is of great convenience. Among the types of oscillator available for Variable Frequency Oscillators, the best known is possibly the "Clapp" and this is employed in the **GELOSO SIGNAL SHIFTER**.



**WE KEEP STOCKS
OF—**

Trimax Transformers and Filter Chokes.
National " " " " "
A. & R. " " " " "
Ironcore " " " " "
L.R.C. Resistors—carbon, wire wound and
hi-stability type.
Eric 1 watt and 1 watt ceramic encased
carbon Resistors—10 ohms-10 mega.
Alumilium Chassis—All sizes.
Phillips, Mullard, Radiotron and Brimar
Valves.
Spaghetti—1 mm. to 5 mm. Red, green,
black, and yellow.
Tinned Copper Wire—1 lb. reels, in 16,
18 and 20 gauge.
Teletron Valve Sockets—7-pin miniature,
9-pin miniature, with and without
cans. Moulded and mica filled types.
Ducon and U.C.C. Disc Ceramics for T.V.I.
By-passing.
Paton Test Instruments.

If we have not your requirements in stock, we will obtain them for you if possible. Use our Mail Order system.
(Please include Freight and Exchange)

THE HOUSE OF QUALITY PRODUCTS

PHONE:
MU 2426

WILLIAM **WILLIS** & CO. PTY. LTD.

PHONE:
MU 2426

428 BOURKE STREET, MELBOURNE, C.1, VIC.

AERIAL EQUIPMENT

14 gauge Hard Drawn Copper Wire, measured to any length	1/- yard
72 ohm Co-Axial Cable	2/3 yard
50 ohm Co-Axial Cable	2/1 yard
72 ohm Twin Flat Line	1/- yard
300 ohm Twin Flat Line	1/3 yard
Beach Stand-Off Insulators, suitable for 10, 15, or 20 metre beam arrays:	
Edystone Type 916	4/- each
Aegis Type BH2	9/8 each

**"WODEN" MULTI-MATCH
MODULATION TRANSFORMERS**

Features—

- ★ Potted type compound filled (vacuum impregnated).
- ★ Universal application
- ★ Primary impedance range: 2,000 to 18,000 ohms.
- ★ Secondary impedance range: 200 to 21,000 ohms.
- ★ Highest efficiency—lowest weight per watt.
- ★ Easy to solder heavily silver plated tags.
- ★ Above or below chassis wiring.
- ★ Capacity: 30 to 250 watts.

List	Audio Watts	Max. Sec.	Overall Size	Weight
No. Wats	RF In. Current	L. W. H. lb. oz.		
UM1	30	60	120 Ms.	3/2 x 32 x 58 5 8
UM2	60	120	200 Ms.	5 1/2 x 4 1/2 x 51 11 8
UM3	120	240	250 Ms.	5 1/2 x 5 1/2 x 51 14 8
Price:	UM1		£7/9/9 inc. Sales Tax	
	UM2		£10/13/3 "	" "
	UM3		£12/2/6 "	" "

**A Merry
Christmas
and A
Prosperous
New Year**

METAL CABINET
specially designed for

"Geloso" V.F.O. and
Final R.F. Stage

Grey hammettite finish
Louvers screened internally
Removable base plate and
hinged top lid. Complete
with front panel and chassis
17 x 10 x 2 1/2 inches

£6/0/0
including Sales Tax.

SEE US FOR—

- T.V. Components.
- Ceramic and Mica Condensers.
- Paper and Electrolytic Condensers.
- Special Condensers to order.
- Special Chassis and Cabinets to order.
- Microphones—All types.
- Recording Tape—1200 and 1700 ft. reels.
- Recording Accessories.
- Pick-ups and Turntables.
- Eddystone Shortwave Components.
- Electrical Equipment by Bulgin and Belling Lee.
- M.S.P. Oak Switches—Ceramic, Bakelite.
- M.S.P. Oak Vibrators—all types.
- M.S.P. Jensen Speakers.
- I.R.C. and Duxon Potentiometers, carbon
and wire wound—all types.
- Scope Soldering Irons—Transformers and
Accessories.
- High Fidelity Equipment—Amplifiers,
Control Units, Speakers and Cabinets,
and Consoles to order.

FEDERAL, QSL, and



DIVISIONAL NOTES

THEMATIC

Fed. President: W. T. S. Mitchell, VK3JUM.
Fed. Secretary: L. D. Bowie, VK3DU, Box 2511W, G.P.O., Melbourne, C.I., Vic.
Federal Councilors:
 New South Wales—Bob Godall, VK3ARG.
 Victoria—Dave Wardle, VK3ADW.
 Tasmania—Arthur Wali, VK3AW.
 South Australia—Gordon Bowen, VK3SXU.
 Western Australia—Ron Hodge, VK3KWW.
 Tasmania—Gung, Fisher, VK3KU.
 Papua-New Guinea—Russ Colston, VK3KXK.
Fed. Contest Committee: Reg. Harris, VK3SRK.
 Secretary, Box 1234K, G.P.O., Adelaide, S.A.
QSL Bureau: R. E. Jones, VK3RJ, 23 Lonsdale Street, Box Hill, K.L.I., Vic.
 Awards Manager: A. G. Weynon, VK3XU, 5 York Street, Bonbeach, Vic.

NEW SOUTH WALES

President: Percy Healy, VK3APQ.
Secretary: Kathie Woodward, VK3ZAU, Box 1734, G.P.O., Sydney

Meeting Night: Fourth Friday of each month at Science House, Gloucester Street, Sydney.

QSL Bureau: Box 1736, G.P.O., Sydney. Frank Smith, Manager; assisted by Allan Smith, VK3AII.

Zone Correspondents: North Coast and Tablelands: Noel Hanson, VK3AJH, Ryan Ave., West Keenside, Newcastle; Les Sparks, VK2AOR, 15 Kuhibah Rd., Highbridge, via Adamstown; and Les Anderson, VK2AOR, Box 2074, P.O. 2, Cessnock. Western: W. Hill, VK2WH, "Carrabillies"; Forbes, South Coast & Southern: E. Fisher, VK2DY, 2 Oxalide St., Warrawong; St. Ives: J. W. S. Edge, VK2AJO, Wallace St., Cocalman; Tamworth: F. W. Fawler, VK3APP, 4 Thompson Cres., Tamworth.

FEDERAL

L.G.Y. ACTIVITIES OVERSEAS

As a result of the L.G.Y. many projects of an interesting nature are coming into being. One such project is a station which has been operated on behalf of the R.S.G.B. by the Postmaster-General has authorized Mr. K. E. Ellis (OK8WV) to establish the station at "Hill Top", Well Hill, Chelmsford, in Kent. The call sign allocated to the station is G3RGVY and it will operate on a frequency of 145.0 Mc. using a power of up to 1 kilowatt.

CONTEST CALENDAR

Compiled by W.I.A. Fed. Contest Com.



ROSS HULL MEMORIAL

Mands: 10-54, 56-57, 144-145, 188-190 Mc.
 Date: 1st December to 31st January.
 Rules: As published. "Amendment 50-54
 Mr. Scoring on 56-57 Mc. as for
 54-55 Mc. Special Award" Greatest
 distance over 3,000 miles.

"OK DX CONTEST"

Date: 8th December, 1960—9000-1900
 G.M.T.
 Rules: See this issue "A.R.".
 Bands: 40, 20, 15 and 10 mcs.
 Logs: To Box 98, Prague, Czechoslovakia.
 Postmark 15th Jan. 1961.

B.E.R.U. (C.W. Contest)

Date: 25th January to 26th January, '61.
 Duration: 2001 G.M.T., 25th, to 2300
 G.M.T., 26th.
 Rules: As for 1957.

"Amendment: Sections: High Power,
 Low Power (25 watts limit); Receiv-
 ing Section.

NATIONAL FIELD DAY

Date: 25th January
 Rules: See this issue "A.R."

OV MUNICH—

Date: 1st October to 31st December, '61.
 Bands: All hf. bands—3.5-38 Mc.
 Purpose: To work as many Munich stations as possible. Stations identified by suffix "C12" after call sign." Example D21FZB/C12.
 Rules, Awards, etc. "CQ" Oct. '61, or
 Fed. Contest Committee.

THEMATIC

President: F. G. Ball, VK3VY.
Secretary: R. L. Lancaster, VK3VJL.
Administrative Secretary: Mrs. May, C.O.R. House, 191 Queen St., Melbourne.
Meeting Night: First Wednesday of each month at the Radio School, Royal Melbourne Technical College.

Divisional Sub-Editor: V. M. Jones, VK3VYE, 7 New St., Surrey Hills, K.L.I.

QSL Bureau: Inwards and Outwards—W.I.A., 181 St. Kilda Road, Melbourne, C.I., Vic.

Zone Correspondents: Western: W. J. Kinsella, VK3AKW, Magdal, Luberck; South Western: W. Wines, 48 Cranley St., Warrnambool, and W. Zimmer, VK3AWZ, 75 Skene St., Newhaven, Port Fairy; Central: P. J. McLean, 181 Lemon Ave., Mildura, Midland; E. Johnson, VK3ND, Farnsworth St., Castlemaine; North Eastern: L. Elsison, VK3ALE, 78 Orr St., Shepparton; Eastern: J. Spark, VK3AJK, 20 Marshall Ave., Moree.

QUEENSLAND

President: Frank Bond, VK4ZGM.
Secretary: W. J. Rafter, VK4PVR, Box 583J, G.P.O., Brisbane.

Meeting Night: Fourth Friday in each month at the State Service Union Rooms, Elizabeth Street, Brisbane.

Divisional Sub-Editor: A. Simpson, VK4ZAE, Cnr. Baden Powell and White Sts., Everton Park, Brisbane.

QSL Bureau: Inwards—J. Flies, VK4FJ, Vanda St., Buranda; Outwards—Miss Clair O'Brien, 83 Jardine St., Stafford.

Zone Correspondents: Maryborough: R. J. Glassop, VK3BG, 50 North St., Maryborough; Townsville: R. K. Wilson, VK4RW, Hogan St., Stuart, Townsville.

TAZMANIA

President: F. J. Evans, VK7FJ.
Secretary: M. Hurlburt, VK7TM, Box 318B, G.P.O., Hobart.

Meeting Night: First Wednesday of each month at W.I.A. Clubroom, 147 Liverpool St., Hobart.

Divisional Sub-Editor: E. W. Watson, VK7VY.

QSL Bureau: Jim Rumble, VK3RJU, Box F151, G.P.O., Hobart.

Zone Correspondents: Northern: K. J. Briggs, VK7LX, 16 Melbourne St., Launceston, North Western: L. S. Eddington, VK7LX, 3 Jenner St., Wynyard.

PAUPA—NEW GUINEA

President: P. N. Noan, VK3FNF.

Secretary: T. J. Casey, VK3NT, Box 304, Port Moresby.

Divisional Sub-Editor: R. Clark, P.O. Box 304, Port Moresby.

QSL Bureau: R. Llyod, VK3ZAL, Box 304, Port Moresby.

SOUTH AUSTRALIA

President: W. J. Bulling, VK3XK.
Secretary: B. W. Austin, VK3CA, Box 1234K, G.P.O., Adelaide. Telephone: UX 2881.

Meeting Night: Tuesday of each month at 17 Waymouth St., Adelaide.

Divisional Sub-Editor: E. C. Dene, VK3EF, P.O. Box 44, Gawler, S.A.

QSL Bureau: G. Luxton, VK3JX, 27 Blair Rd., West Mictcham, S.A. (Inwards & Outwards).

WESTERN AUSTRALIA

President: J. E. Rumbol, VK3RUA.
Secretary: R. J. Elms, VK3BZB, Box N100B, G.P.O., Perth, W.A.

Meeting Night: Third Wednesday of month at Perth Tech. College Annex, Mounts Bay Rd.

Divisional Sub-Editor: E. J. R. Cowles, VK3EJ.

P.O. Box 100, Perth, W.A.

QSL Bureau: Jim Rumble, VK3RJU, Box F151, G.P.O., Perth, W.A. (Inwards and Outwards).

TASMANIA

President: F. J. Evans, VK7FJ.

Secretary: M. Hurlburt, VK7TM, Box 318B, G.P.O., Hobart.

Meeting Night: First Wednesday of each month at W.I.A. Clubroom, 147 Liverpool St., Hobart.

Divisional Sub-Editor: E. W. Watson, VK7VY.

QSL Bureau: Jim Rumble, VK3RJU, Box F151, G.P.O., Hobart.

Zone Correspondents: Northern: K. J. Briggs, VK7LX, 16 Melbourne St., Launceston, North Western: L. S. Eddington, VK7LX, 3 Jenner St., Wynyard.

It is also interesting to note that for the period of L.G.Y. the Norwegian Amateurs will be operating on the 50-54 Mc. band. The time of operation will be from 0800 to 1800 G.M.T. daily and amateur calls will be AA, AB and PB.

PARIS CONFERENCE 1957

During April 1957 a conference of v.h.f. managers took place in Paris. Delegates came from a great number of Amateur Societies in Europe and G.I.M.A. Mr. A. O. Milne, attended as Vice Secretary of the Region 1 Bureau I.A.R.U.

Much of interest to v.h.f. operators was discussed, particularly a suggestion from V.H.F.N.R. to use the 144-143 Mc. portion of the two meter band for v.h.f. The discussion it was finally decided that the DX portion should be 145.2 to 146 Mc. because this portion of the band is relatively unused.

FEDERAL QSL BUREAU

Malayan Amateur Radio Transmitters' Society announces the issue of the M.A.R.T.S. Membership to Overseas Amateur Members who are not members in combination of having worked: 10 V.S.I.s, 10 V.S.E.s, 2 V.S.E./V.S.E and V.S.S counted as one area, and 1 Z.C.S. Cards with three I.R.C. (for return of card) should be forwarded quoting your membership number and name. Send to: 10, Jalan 1/11, Kuala Lumpur, Malaya. Overseas membership is world-wide and costs 15/- Australian and entitles the member to "The Malayan Radio Amateur", which is published on alternative months.

The L.A.R.E. announce the addition of the following countries to their existing list of 57 for the W.A.A. Award: 58—San Andres and Providencia Is., HK9, 59—Navasas Is., HK4, 60—Sint Maarten, P.V.B., 61—Saint Martin, P.V.B., 62—Anguilla, YV9, 63—Hervila Islands, XE4, Cora Is., YNG, 65—British Virgin Is., VP2, with regard to country No. 38, Newfoundland and Labrador, this counts separately from Canada when the QSO was made before December 31, '54. After this date VO contact count as VP2.

The Central High School Radio Club of Sioux City, Iowa, advise they will be operating in the State of South Dakota on Nov. 28, 29 and Dec. 1. The call will be WELN-2. They will be on 10, 12, 15, 17, 20 Mc. Bands c.t.s. only. This is the first time this information may be of interest to stations chasing South Dakota for W.A.S. certificate.

Rules governing the International C.W. Competition "OK DX Contest 1960" are to be found in the International Contest organized by the G.C.R.C., Box 60, Prague. The Contest

commences at 0000 G.M.T., Dec. 8 and ends at 1200 G.M.T. on the same day. Bands permitted are 3.5 through 22 Mc. The usual six digit number is to be exchanged. Entrants may work any country except their own and contacts with OK earn double points. Contests worked during the year as OK earn double points as well. Contests worked as multipliers which are considered separately for each of the five bands, making a total multiplier of 30 possible. Three points are earned for each completed contest, plus 100 OK. Points may be sent to the above address and mailed not later than Jan. 15, '58. The 1950 OK Award and the 1951 Award are available to competitors and Divisional Sub-Editors.

PAUPA is the last call sign of Jules Wenslare and it is his 10th call sign. Jules was stationed in VK4 during the war and is known to many VK Amateurs. He is on 16 Mc. c.w. daily between 10000 and 11000 and directs contacts with VK Ham, particularly with Harole VK3CARA. He will QSL all QSOs.

This year's relief vessel for the Antarctic is the Sir Douglas Mawson instead of the Kista Dan. The vessel is en route to Australia at the moment.

Ted and Virginia Westlake of the U.S. Civil Aviation Mission, San Jose, Costa Rica, who came to Australia in 1956, have returned to America. They hope to be back in Australia in 1958. They have returned statewide and hope to be based under a K3 call shortly.

Cards from CP3EP for contacts in 1955 have recently come to hand. They bear the appearance of having been mounted in a card. Evidence of the tremendous activity of the holder of the call sign, Walter Lanza, the QSO numbers of the cards in this band range in the 30,000 region!

It is a shame call on Cup Day from John Jones, VK3JY, operator on the coastal vessel Iaruna. John was seeking information on the whereabouts of Harry Noon, ex? VK2EJ, who is alleged to have been a resident of VK3 for a brace of years. Have no record of Harry lifting out a VK3 call sign and apart from the

SILENT KEY

It is with deep regret that we record the passing of:

VK2CM—Charles MacLurcan.

VK5HI—John H. Clifton.

RECENT BOOKS OF INTEREST TO HAMS

NOVICE AND TECHNICIAN HANDBOOK

by William Orr. PRICE—35/-, Postage 1/-.

The purpose of this Handbook is to provide an insight to Amateur Radio, and to explain in simple terms some of the Basic Principles underlying Radio Communication.

WORLD RADIO AMATEUR CALL BOOK MAGAZINE

FALL PRICE—60/-, Postage 2/-.

"This is a must for all Hams"

AVAILABLE NOW FROM—

McGILL'S AUTHORISED NEWSAGENCY

Est. 1860

183-185 ELIZABETH STREET, MELBOURNE, C.1, VICTORIA

"The Post Office is opposite"

Phones: MY 1475-6-7

BRIGHT STAR RADIO

46 EASTGATE ST., OAKLEIGH, S.E.12 UM 3387

AMATEUR PRESSURE-TYPE CRYSTALS

3.5 and 7 Mc. in FT243 type holder, £3 each plus 12½% sales tax. Regrinds 30/-.

FISHING CRAFT FREQUENCIES

The following frequencies are held in stock: 6280, 4095, 4535, 2760, 2524 Kc. in FT243 holders. Immediate delivery.



We also manufacture—

Quotes on request.

CRYSTALS FOR TAXI AND BUSHFIRE SETS



SPECIAL

VACUUM MOUNTED CRYSTALS

for general communication frequencies in the range 3 to 14 Mc. Higher frequencies can be supplied.

BRIGHT STAR CRYSTALS may be obtained from the following Interstate firms. Messrs. A. E. Harrold, 123 Charlotte St., Brisbane; Gerard & Goodman Ltd., 192-198 Rundle St., Adelaide; A. G. Healing Ltd., 151 Pirie St., Adelaide; Atkins (W.A.) Ltd., 894 Hay St., Perth; Lawrence & Hanson Electrical Pty. Ltd., 56 Collins St., Hobart; Collins Radio, 408 Lonsdale St., Melbourne; Prices Radio, 5-6 Angel Place, Sydney.

Glenburn postal address shown in the Call Book, was reluctantly compelled to give John barrelled in.

The QSL Manager of the Aruba (Neth. Antilles) section of the V.E.R.O.N.A. advises that their QSL Bureau address has been changed from Box 80 to Box 332, St. Nicolaas, Aruba, Neth. Antl. The new address is the following: P.I.R.A. (Aruba Is.), P.I.R.E. I (Bonaire Is.), P.I.M.C. (Curacao Is.), and P.I.M.E. I (Bonaire Is.). Also cards can be forwarded for all PZ stations.

Austine VK3YL confirms the already published information that the charge for the W.A.S.M. Certificate issued by the S.S.A. has been altered from 10 L.R.C. to 10 Swedish crowns. Other snippets from her interesting notes are: Phil TETIS is now VENDE, Ted SULF is now 2E0GUD, whilst John OLDFORD is W6HJO/K1. The King of Wales, Alaska, Austria was the recipient of a fine message of the A.R.R.L./V.L. Convention held at Chicago. Louisa Sando, WR2J, sent a programme signed by over 80 V.L. members who attended. Michel PAPARO, also sent her a picture of Tahiti. Tahiti Nui took on the day they drifted from Tahiti. Michel hopes to visit VK at some later date on a lecture tour.

Stations who made six contacts with the Genoa district of the A.R.L. during the recently staged Columbus Marathon are reminded that they are entitled to an "artist certificate". Cards can be posted to 31st V.L. accompanied by the QSL cards to repeat to the Genoa stations worked to A.R.L. Caselle Postale 367, Genoa, Italy. Further information from the Federal QSL Bureau is available.

Card from the V.L. Board took three nose dives during October, which indicates that a heavy month during November and December can be expected. Writer suggests that many hours of listening to the beeps from the assorti- Spunkins would be a pleasant change to working DX—and causing the card statistics to rise.

Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

On Friday, 18th October, at Science House, Gloucester St., Sydney, the N.S.W. Division held their usual monthly meeting. The lecture for the evening, under the title of "A Member Built It", was given by Norm Beard, 2AJL and Max Bobela, 2OT. Norm 2AJL described a mixer for construction and a 200 w.h.f. receiver having a crystal locked converter covering 30-84 Mc., 88-90 Mc., 144-148 Mc. and 282-300 Mc., using a t.v. tuner as the basis and a 6.5 Mc. crystal for oscillator-multiplier giving 100% intermediate frequency which could be fed into a 100 k.c. strip. This was a rather ingenious method of producing a rx from commercial equipment for bands not catered for in the usual manner.

Max 2OT described and demonstrated the method of construction of a table top to capsule a 100 w.h.f. controlled covering 30, 88, 90, 144 and 148 Mc. The basis for the unit is an A.R.T. chassis and by reworking the coil boxes enable band changing to be carried out very quickly. The finished rx made a perfect match for the A.R.T. Max 2OT full construction details and explained how easily the principles of selectivity in tx's could be incorporated to make sure those unwanted harmonics are suppressed.

The vote of thanks was given by Lyle SOW, who expressed the view that this type of lecture was very good and really gave members the benefit of ideas others had in the construction of equipment.

To add to the ideas given by the lecturers, Harry 2AZP, designer of transmitters, he had designed which was suitable for use as a matching device for a single-ended output to a balanced transmission line.

During the business portion of the meeting Bob JARGO gave an outline of the School of W.I.C.E.N. and the work he had done in Melbourne, Vic., when the problems of maintaining communications in time of emergency were discussed. Bob urged members to fill in the questionnaire which had been included in the Divisional Bulletin so that the full potential resources of the Division's emergency network could be established as this State's C.D. authorities were very interested.

The request from F.E. that the name of the Wireless Institute's network be altered to W.I.C.E.N. which was carried unanimously. Bob also outlined the discussions with F.E. on the necessity for the W.L.A. to be represented at the International Telecommunication Conference at Geneva in 1960.

Dave 2E0 reported on a visit to Goford by the Divisional President (Peter 2APQ) and Divisional Councillors Max 2OT and Norm

2AJL, made to attend the inaugural meeting of the Central Coast Radio Club and Central Coast Section of the N.W. Div. W.L.A.

This meeting was well attended and in process seems are some of the office-bearers elected were Mr. R. Dean, M.L.A., Patron: Major IHD, President, R. Brook, Secretary. Rev. 2VA will be in charge of the technical side of the club and has obtained the use of some radio facilities. A P.C. class, a total of 25 have already enrolled for the class.

A very successful cravetion of the South Western Zone was held at Cookson on 26th and 27th October. Congratulations go to zone officer Jim 2AJO and his assistants for a very fine effort. Full details are given elsewhere in this issue.

News from the far North Coast has been scarce of late, but Charlie 2AZK, who has just returned after three weeks at Murwillumbah, reports that he had spent some time assisting a newcomer to Amateur Radio, namely, Eddie 2BZB, who has obtained a 100 w.h.f. receiver, also a new antenna. Eddie is now operating on 40, 30 and 15 m. bands. Charlie also visited two other active Amateurs, Bill 2ZY and Norm 2HKK, and took the opportunity of attending the marriage ceremony of 2ZY and extended the congratulations of the W.L.A. to Bill and his wife.

Ramsey 4AB gave a demonstration of his latest camera from U.S.A., producing finished prints in 15 minutes.

Howard arrived with a stay at Grafton to see the Jacaranda trees, which one hears so much about, are indirectly lighted with fluorescent lights, and to spend a very pleasant evening with Roy 2NY and Bob 2WQ.

It is with very deep regret that we report the death of Charles MacLurcan 2CM on Saturday 26th October. Charles was one of the signature men of the Wireless Institute and of the Association of the N.S.W. Division in 1933 and was well known for his work in the early days of broadcasting in Australia.

His experimental work in Amateur Radio is equally well known and will be the subject of conversation when the work done and results made during the past thirty years is discussed.

Recently Charles presented to VK3WJ the operating console from which VK3CM was the first station now being installed at the Divisional Station, Dharawal.

Deepest sympathy is extended to Mrs. MacLurcan and family from Council and members of the Division.

HUNTER BRANCH

A good number of members were present at the October meeting of the Branch held at the usual location, the University of Technology. Satellite "Sputnik 1", with its transmissions on 30 and 40 Mc., was discussed at length. Lionel 2E1 gave an interesting circuit of a harmonic oscillator as developed in the Marconi Laboratories. Certificates of membership were presented to new members and associates by the Branch President. October brought visitors and new call signs to the district and we were very happy to welcome them.

The popular V.L. operator, Muriel 2AIA, has been holidaying at the Lakes and those two robust 17¹/2 gentlemen, Bill 2ZL and Bob 2AJL, have been entertaining the good lady with lemon drinks and oysters. Heartfelt congrats to Les Raber, who has gained the full set and also the 1948 V.H.F. Trophy. Julian should bring in the DX on mounting the trophy. The writer remembers when Les got the first practical experience some years back in a National Field Day at Anna Bay, with ZAHA/P, 2ASJ, 2E5F and our late friend, Ivan 2IS.

We have gained a well known and popular member in the person of Frank 2AIP/2APQ mobile who is now toiling in Newcastle. Congratulations to Harry 2AZFA who has 100 countries confirmed. Harry is waiting for a few extras before sending for DX C.C. Rodney 2CN has had modulator trouble. Quite a bit of 20 and 40 m. activity from Vandy 2EP.

Henry 2AIA, as well as the four among V.L.A. with accurate logging of "Sputnik", was one of those who heard the QTC from "The man in the moon"!! 2ASJ heard that howler, Inc. Dave 2EZZ appeared briefly on 7 Mc. to discuss holiday plans with his pals, 2AJD and 2EZZ.

New member, Gordon 2CI, has returned from a trip to the North West where he visited Ben 2ABT. Rumour has it that Alan 2FT is fitting his gear and taking up photography which is a far worse disease. Silence on him.

The new members of the Branch will be held at University of Technology, Tighe Hill, at 8 p.m. on 13th December.

Listen for latest news of Branch activity at 8 p.m. every Monday night from 2AZW on or about 7145 kc.

OBITUARY

CHARLES MACLURCAN, VK3CM

It was with deep regret that we record the death on 25th October of Charles MacLurcan, VK3CM.

Charles was one of the Pioneers of Radio in this country. These are a few memories of VK3CM received from Joe Ered, VE2JE, who, over the years, was closely associated with Charles.

Charles MacLurcan commenced operation in the early days with a transmitter and receiver located on the roof of the Wonthaggi Hotel. For many years the tall wooden mast on top of the hotel with its insulated rigging was a familiar sight to the "oldtimers". This station was in operation for many years before the 1914 war.

Charles was a foundation member of the Wireless Institute of N.S.W. in 1912. His interest blossomed into the commercial field by the formation of the "MacLurcan and Lane" Co. who handled a wonderful range of spark, transmitter units, crystal receivers, etc. The first three elements Audion valve as marketed by the German back's Electric Importing Co. of New York. (I have a well preserved copy of the MacLurcan and Lane catalogue of 1912 vintage.)

Immediately after the cessation of hostilities in 1918, Charles was one of the first experimenters to get "on-the-air" and in association with Charles, helped build the little and famous 100 watt transmitter which on 6th March, 1923, carried out two-way transmission with myself located at the P.M.G. Radio Service Station at Collin's House, Melbourne. The Sydney transmitter operated on 1200 m. and was located at station 2E90 metres. This transmission handled the first "DX" third party traffic between experimental stations in Australia for over the circuit I requested Charles to make my path in the Murray Hill to inform them that I would be returning to Sydney in a week's time, consequent on the taking over of the P.M.G. Radio Service by A.W.A.

Very soon after my return to Sydney work commenced on fitting the 300 transmitter with modulator and receiver and the commencement of commercial broadcasting. This little station was heard regularly on Sunday nights, broadcasting music and entertainment, even to the extent of having advance programmes published in the Sunday press. The annual announcement, "This is station 2CM, broadcasting from Stratford-on-the-Strain", and the conclusion, "Now don't forget to wind up the set and put out the clock", to be followed by the National Anthem.

Rapid strides were made following the first experimental 100 watt and 1000 metres in 1923 a fifty watter was hatched to a 16 ft. quarter wave vertical radiator and contact made with GPO (Mr. Simmonds), of London, on the wave with power, the next step was with a 200 watt transmitter on 1000 metres which was exchanged with Major 2CM of San Francisco. To give the whilst a little rest a metal disc was cut with the letters MOT and driven by a long playing 78's spring motor for the first time in a transmitter. Two-way contact was established. In later years examination of amateur cycles showed that an excellent low amateur period helped greatly in these transmissions.

When the first crystal controlled transmitters came into favour, Charles was well up to the fact, and well before 1930 had a long line of frequency multipliers to handle the relatively low frequency places of quartz than available.

In later years at Shell Cove Head, Neutral Bay, Charles had a GPO rotary beam erected on the roof of the MacLurcan mansion. The beam of the horizontal elements was a little too much for the spacing of the chimney pots, so Charles tared up the ends like baffle bars and proceeded to bowl over the DX.

Towards the end of his most interesting life, Charles limited his activities to 80 m. and only a few weeks before passing away, he could be seen in contact with VK3CM, 2VN and 2JE, the "oldtimers", who so shortly after would gather for their last sad and solemn rites which must come to an end in the end.

Deepest sympathy is extended to Mrs. MacLurcan and family from members of the Wireless Institute of Australia.

SOUTH WESTERN ZONE

Our main item of news this month is of course the Fifth Annual Convention of this Zone held at Cooloolan on 26th-27th October. Once again a very successful Convention has been held. Made possible by the members who attended and the very well distributed articles, both in and out of the zone. My very great thanks to all who attended.

On Saturday afternoon members who had arrived were registered, the first visitors to reach Cooloolan being Jim and Ruth Corbin. Your scribe then showed those present, our new town centre—the swimming pool—here very favourable comment was made. Another name which deserved mention is that of the first 144 Mc. tx hunt (1st ZXA, 2nd ZPN). At 8 o'clock dinner was served in the R.S.L. Hall by the Cooloolan Presbyterian Ladies, who had just held an excellent job. At the conclusion of dinner, your scribe, as Chairman, welcomed the visitors, read out apologies, and then called on the President of the N.S.W. Division, Pierce ZAPQ, to officially open the Convention. During the evening we heard of the passing of our fellow Amateur WENCM, who stood and observed two minutes' silence in memory of Charles.

The Chairman then called on Stewart ZPL to report to the President. Stewart did so very ably. The Chairman then called on Mr. Kingdon, of the local Press, who replied as an outsider, and made comment on the radio place in our community. Amateur operators and state, he was very proud to be associated at dinner with Ham operators and was very interested in the President's remarks regarding W.I.C.E.N.

A Ham's Amateur Hour was then held and all stated that it was a good show. All competitors receiving a prize; "Baptizes" Savage ZPL being the winner. Films were then shown by Mr. O. E. Muller, our guest for the evening, which were interspersed by feats of magic performed by Harry James of Griffith. At the conclusion of the programme supper was served. I think all had a good time.

Sunday commenced with the Scramble, the winner being Ross SPN, second Stewart ZPL who won on a "sound back" from Bob ZCX. The Ham's Amateur Hour was again run by Keith ZXA with Geoff ZBQ second. The "Hunters" commented that they were fooled for a time in our fast country. The 1WI official broadcast was conducted from ZAO's shack, the President, Pierce ZAPQ, on the microphone.

The afternoon events commenced with the blindfold tx hunt and much amusement was caused, the winner of the gen's event was John ZNV of Griffith. The ladies' event went to Mrs. ZAO, with Miss Drift of Griffith, second being Mrs. Howden. The auction, the boys collecting the usual junk.

Afternoon tea was the final item on the programme and afterwards cars were loaded up, farewells given and we, regretfully, watched our mates leaving for their respective destinations, as far off as Sydney, Goulburn, Tumut, Hillston, Gulgong, Wagga, Deniliquin, Dalton, Canberra and Ilube. Approx. 60 members, XYLs, and harmonics attended.

In conclusion, I must say that the success

of the Convention organising was due mainly

to the efforts of Mr. and Mrs. Jack Shaboty,

Treasurer Stan Abbey (my Jack of All Trades)

always on hand, to Stan's mother and to my good wife, for their efforts. Conventions are easily arranged with such helpers. Once again thanking all who attended and looking forward to seeing you all again, at next year's South Western Zone Convention.—ZAO

VICTORIA

Some months ago mention was made in these notes of the excellent lectures we have had at our monthly meetings. Since then there have been many more and on 6th November there was yet another when the Rev. Bro. V. McKenzie introduced us to the inner workings of the cyclotron and associated machines. As you will know, the speaker, in addition to his other qualifications, is also a Ham and holds the call of JAVM, but humoring has had to take a back seat of late because of his present duties in maintaining his Master of Divinity Degree. However, this does not prevent him from being a very frequent visitor at the monthly meetings and his keen interest in Ham Radio in general was amply evidenced by his lecture to this meeting. Not only did he give us an excellently presented lecture on

the cyclotron and associated machines, but he also took us up to the University and introduced us to the real thing. The art of dabbling with electrons, protons and neutrons was demonstrated and in the hands of the speaker, to say not I, come to commit things to paper, I find I have been bitten into a sense of false security, hi!

Our formal thanks were presented to Bro. McKenna at the meeting for his lecture, but the opportunity did not arise to thank him and his helpers for the trouble they went to in ensuring that we saw all that there is to be of the machines they use in this somewhat dangerous bullet firing occupation and the digital computer which helps them to come up with better and better answers. Many thanks for a most informative evening. Your efforts were duly appreciated.

The general meeting held prior to the lecture resulted in the usual round of business and the following new members were admitted: Full Members—J. G. Goodall, ZBZG, L. R. Sturz, G. A. Anderson, ZBZP, F. Wilson, G. Weber, H. Schmid, G. D. Robinson, D. M. Kenzie, W. McFarlane, J. Cunningham, J. Anderson, J. A. Moore.

About 60 attended the meeting including VR3JN from Fanning Island, who until recently was very active on 14 Mc. from that location. He reported that the chief activity on the island is copper growing but his interest apart from Ham Radio, was in the cable relay station in the Vancouver to Fiji line which is also on the island. The population is about 5000 with 3000 natives there are 1000 GDX and DX rolls in 24 hours per day. This news could lead to a mass migration of DX hounds, I guess.

With all the recent excitement over "Sputnik" it was gratifying to note that the Ham participation in writing articles on these satellites was well to the fore in the daily press. This was due entirely to the untiring efforts and team work of the members of the fraternity who participated and illustrates once again that the Amateur is ready and willing to fill the breach when need arises.

A motion congratulating the W.I.A. on its commendable efforts in handling this matter, both from the technical and the publicity point of view, was put to the meeting and carried unanimously.

Comell would like it known that they are endeavouring to build up the library so that more than one copy of the various publications will be available for issue. If you have a spare copy or copies of "CQ", "QST", R.E.G.B. "Wreath", "Short Wave Magazine", etc., which you would care to contribute for this purpose would you please forward them to the rooms. If desired, donations from the metropolitan area can be collected by arrangement with Mrs. May at the rooms, and country contributions may be sent to G.O.D.

Recently a most gentle soul salled forth complete with black box to take a look at the field pattern of the newest antenna. During his perambulations he was mistaken for an undesirable character by an observant neighbour, and ere long was on his way to the local constabulary to present his identification card. If you hear any resemblance to Max ZATH, confine your tests to your own back yard. It could happen again.

In accordance with usual custom the December meeting of the Victorian Division, to be held on the 4th, will be a social and a children's night, with some games, etc., as bring along the YL, XYL and harmonics and make it a bumper night.

There will be no general meeting in January so the first meeting in 1958 will be on 28th February.

Christmas Greetings and a Prosperous New Year to all. See you next year.

SOUTH WESTERN ZONE ACT AS HOSTS TO STATE CONVENTION

The 5th State Convention was held at Colac on 5th and 6th November and Radio Amateurs met at the home of Gordon ZAGV, whose XYL very kindly provided us with afternoon tea. To you Mrs. Vincent, our sincere thanks. The bodies of the mobile on 14 Mc. were well catered for as ZAGV worked all who were on this band.

The Convention was officially opened before the dinner by the Mayor of Colac, Cr. McLean who welcomed all participants to Colac. The dinner which was excellently catered for followed. After dinner the usual meeting took place and many and various things were discussed including the next South Western Zone Convention which is to be held in Warrnambool on a date to be fixed in March. Supper was served on completion of the meeting.

Sunday's programme commenced with visits to the studios of the local Hams. At 10.30 a.m. the 144 Mc. hidden transmitter hunt was held, but the tx gave some trouble and was taken off the air. It was later located by Jack ZAJK and Mike, who won the title. Later ZAJK conducted a tour of the local broadcasting station NCB and also displayed gear essential to be stations and demonstrated same.

After lunch the 3.5 Mc. hidden tx hunt took place, but I was unable to discover the winner's identity. We returned to the Gardens for the 40 mc. scramble, games and competitions for the day. The highlight of the day was the nail driving contest was ZAPR's XYL, Mrs. Hallyburton. The sack race was won by a Dutch girl, name unknown. The lucky programme was won by Mrs. Phil Moncur and the ham's Bill ZAWA. A prize was awarded to David Scott for the Ham travelling the longest distance to attend—David covered 262

We are pleased to announce that once again the S.W. Zone has been awarded the Xmas Trophy, making it our third win. The actual attending at the Convention was gratifying, approx. 100 in all.

Low Drift Crystals FOR AMATEUR BANDS

ACCURACY 0.02% OF STATED FREQUENCY

3.5 Mc. and 7 Mc.

Unmounted £2 10 0

Mounted £3 0 0

12.5 and 14 Mc. Fundamental

Crystals, "Low Drift"

Mounted only, £5.

THESE PRICES DO NOT INCLUDE SALES TAX.

Spot Frequency Crystals Prices on Application.

Regrids £1/10/0

MAXWELL HOWDEN
15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA



UNIVERSAL MEASURING BRIDGE

- Simplicity of operation.
- Magic eye indicator cannot be damaged by overload or wrong connections.
- Built-in self-checking system.
- Accuracy is unaffected by mains voltage variations.
- Open bridge position disconnects internal standards to allow use of external standards.

PRICE £30/10/- excluding tax
IMMEDIATE DELIVERY

TYPE
A56048

Resistance Range:
0.1 to 10M

Capacitance Range:
10 μ F to 10 μ F

Inductance Range:
Comparative measurements
above 1mH

Comparative Measurements:
Ratio 0.1 to 10.0 with switch on EXT

Ratio 0.8 to 1.25 with range switch on

$\pm 10\%$ (20% to $\pm 25\%$)

Finish.

Case Twilight-blue dimenso

Front Panel Silver-grey dimenso

Dimensions 9" x 6 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ "

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED

47 York St., Sydney
'Phone : 80 233

167 Queen St., Melbourne
'Phone : MU 9161

544 Murray St., Perth
'Phone : BA 5945

138 Wakefield St., Wellington, N.Z.
'Phone : 43-191

The lecturer for the evening was Bob Reiper, A.R.U., who got under way quickly with a very fine lecture on "Noise in Receivers". Bob really knows that subject, and proved himself an able lecturer, many present envied his ability to speak at length without reference to notes.

Large charts were used to illustrate the various points as they were made in his very well organised discourse. Our old friend, Brian SCA, officiated as Chief "Turner-Over" fair! Bob explained how receiver noise could be divided into two main types, i.e. internal and external noise, and he dealt with the various merits of triode versus pentode r.f. stages in noise control and outlined how the selectivity of the first stages in any receiver governed the amount of noise.

The popular question of noise limiters next came for review and description, and then to bring most of us up-to-date with something a little new, he introduced the concept of spectrum or "image" noise. We all have at times been bothered by the "second" spot type of interference in our receivers, whereby a signal distant twice the LF frequency away rides in on the channel to which we are listening. It was here that many of us realised that although there may be absence of signal at the image frequency, there could very likely be noise.

This condition could be very prevalent on the higher frequencies particularly with cascade front ends. The solution here appeared to be to use a linear circuit with their inherent higher selectivity.

The reception of Bob's lecture was evident from the attentive assembly and aby expressed in a happy speech by Bruce SOR who proposed the motion of thanks to the speaker on delivering his lecture so well, that we were all raised to his (the lecturer's) own standard. (That sounded good but few of us had our doubts as ever reaching Bob's standard.)

Smoko and distribution of QSL cards provided an interval prior to the conduct of the formal business of the evening. Twelve applications for Associate membership were received, a clear indication that Norm Cottman has been active in getting signatures on the dotted line. In fact it had been circulated that he is mostly seen these days with a bundle of application forms in one hand and a ball point pen in the other, and his greeting to all was "Give you signed up yet?"

Oh yes, Norm is busy signing up new members for the forthcoming A.O.C.P. class, still a few members required to enable it to start, so any of you who are thinking about it, now is the time to get in at the start of another series, otherwise it will mean at least 2 months delay for you.

The January Picnic, as advised before, is to be held at Tea Tree Gully this year, and to be held in the public hall. Norm's meeting was treated as a very fine lecture on the behaviour and general principles of artificial satellites, delivered by TKA whose everyday workers assume that it does look like work to you. Kinnaird, director of the Space Department of the University, On the same occasion TLE had on display a complete range of pen-recordings, giving a clear picture of signals from the two objects which have lately been costing us a sleep of the just.

Farther back, but by no means forgotten, was the visit to Cudbys at Clarence who kindly arranged to keep staff on hand every evening so that members could see the Hollies and other accounting machinery put through its paces. It seems a retailer's order comes in for a card of line and amount and in the usual written form, after which things begin to happen rather rapidly. A girl makes pencil marks on a standard card to correspond with the detailed order, another card is inserted so that the card can be read for information—not too sure what it's called—and then, at the tidy clip of 100 cards per minute, the process goes automatically right through to the final typed statement, addressed, dated and signed. Our thanks to those concerned, and particularly to TKA, for an interesting evening.

Your scribe has been perigrinating somewhat and as a result has, for this month, had to lean on information gained via Les SAX, CQ, SSO, and a few contacts made whilst particular credit is given to them for keeping me posted.

We end this month with a touch of sadness in expressing our sympathy to the "Hilton family" in the passing of John SHL who as you all know was only 20 years of age, and lastly our thoughts go to Bob SOD, who, whilst in U.S.A., met with a very serious incident in which his XYL was killed instantly and he suffered severe injuries from which it is feared he will never fully recover. Bob, we must not let the last of which is the impairment of sight. Let us hope that Bob's condition will improve beyond present indications and that he will be able to carry on his wonderful work.

WESTERN AUSTRALIA

At the regional meeting on 15th October the programme included travel films, which included scenes from Harvey, W.A., and also a playback of a recording by GBE of a summary of the work done by the GRO in tracing of the satellite No. 1. A tape was also played containing signals recorded from the satellite on 20 Mc. and the later continuous note on 40 Mc., also a short recording showing a heavy metal due partly to popular comment at the time. At this time the satellite was QRMed at Honolulu. I understand the signals were quite strong, and those recorded were picked up on an 80 m. dipole, fed straight into a converter.

The Divisional Secretary, Bob SRE, shortly due for his long service leave, so a temporary Vice-President was elected to take over the job. Bob will be off duty until January. He has to do plenty of listening on 80 Mc. having gear going well on the band, and is now busy making a beam.

SPM of Meekatharra has recently been here using No. 11 set and has got to good effect, putting in really good signals.

The 40 mc Scramble was won by GCL with 39 points. Ian will be presented with the trophy by the President at the Xmas meeting.

W.C.E.N. (Wireless Institute Civil Emergency Network), is gradually taking shape in VK5. A committee has been formed as follows: EMK (State Co-ordinator and Chairman), SVA, SRE, GCL and SPM. Copies of procedure and phonetic alphabet are being obtained and will be forwarded to all concerned when they arrive.

Slow Morse transmissions are given by GCL on Wednesday nights at a clock on the 25 Mc. band. These transmissions have been found of great assistance to learners, especially those in country districts where it is sometimes difficult to find a "sparring partner" with whom to practice the code.

1967 has already been an eventful year in VK5 and 1968 should be full of interest for all concerned with Amateur Radio.

The President and all members of the Council in VK5 join in wishing all readers a Happy Xmas and best of luck and good work in whatever sphere of Amateur activity in which you are engaged during the coming year.

TASMANIA

We haven't actually been hibernating in the Southern Hemisphere, though through what has been happening in November, meeting was treated as a very fine lecture on the behaviour and general principles of artificial satellites, delivered by TKA whose everyday workers assume that it does look like work to you. Kinnaird, director of the Space Department of the University. On the same occasion TLE had on display a complete range of pen-recordings, giving a clear picture of signals from the two objects which have lately been costing us a sleep of the just.

Farther back, but by no means forgotten, was the visit to Cudbys at Clarence who kindly arranged to keep staff on hand every evening so that members could see the Hollies and other accounting machinery put through its paces. It seems a retailer's order comes in for a card of line and amount and in the usual written form, after which things begin to happen rather rapidly. A girl makes pencil marks on a standard card to correspond with the detailed order, another card is inserted so that the card can be read for information—not too sure what it's called—and then, at the tidy clip of 100 cards per minute, the process goes automatically right through to the final typed statement, addressed, dated and signed. Our thanks to those concerned, and particularly to TKA, for an interesting evening.

We were fortunate to have Dr. Grote Reber in for a lecture just before he departed homeward for the U.S.A. The Doc became well-known in the country when he had spent nearly two years in Hobart on a research project which had mostly to do (we think) with low and medium-frequency radiations from outer space. The wonder of all to some of us, was the two-sleaved dish he had set up in Government hill and cut for something below 200 Mc. This lecture, like TKA's, was taped for the benefit of the other zones.

With TJB back in the fold, a not-so-rare recruit, is gained for W.L.C.E.N., the VK7 portion of which now contributes at 200 SSB on 3500 Mc. Joe TJB now produces the big modulation on 144 Mc., and has also completed a nice steel cabinet to house the whole works. You may be relieved to hear that TJA's modulation, on the other hand, has for the

present packed up completely. TKA is quietly putting TGA's figures into concrete form with tower foundations, and these shouldn't be far out after Geoff's practice on the State's hydro towers.

With so much of the extraordinary in the news, here's wishing you all an ordinary and thoroughly enjoyable Christmas.

NORTH WESTERN ZONE

Would anyone finding a spear fishermen's gun along the N.W. coast please return to Associate David Seale. Any fish attached may be kept. We have a keen interest in keeping the low freq. end of the band and has taken to building hi-fi. amps. Keep away from Sid SFP and Roy TRN, Ken, or you won't have any money left. Our newest Associate, Terry Tang, has University qualifications and was nearly extinction recently by turning his car over on the Bass Highway. It is understood that Terry was chasing a radio signal at the time.

Ray TDN has headed for the v.h.f. and is currently constructing a v.t. rx. Enthusiasm must be contagious, Roy apparently caught the bug from Sid SFP who has been receiving good signals since the weather improved. Jim TJO has been writing a one-eye monster and was due to set up full programmes till close down time late in October.

Believe Dennis TDR's XYL Nathalie, had trouble starting the car whilst shopping. Told her mechanic when she got home she was wrong with the car or with "me". Mechanic hopped into the car which started first pull on the starter. "Must be you, madam!" he remarked. Dennis also had Lance 32A as a visitor and likes the car about as much.

Happy Xmas! Two satellites and an eclipse of the moon. What more do we want to give a Ham something to do. One southern Ham, Doug TAV, even got up at 8 a.m. to see Sputnik II. Good luck to you Doug.

Don't forget to be back on 1st Dec. See it. If you haven't got a rx with a loop, hitch a ride with someone who has. Present Sid SFP is in charge of the rx, having won the last hunt.

Secretary Max Ives is on annual leave at the moment, so hope the weather holds out. Max, keep at the study Max and you'll be able to put a mobile rig in the van. Leon LJP has acquired an AMER300 and is doing something to the front end which I hope it reads him. Let's keep on with your finish Sputnik and I'll do the same to mine. Looks as though there will be another full member on Xing Island soon. Myles McGinnies, at Naracoopa, said for his more during October and was awaiting compensation. I am still awaiting word. Another member for the North West.

As these will be the last notes for the year, have a Happy Christmas for 1967 and don't book any rocket seats for the moon till 1968.

PAPUA—NEW GUINEA

There was a poor attendance at the last meeting which was disappointing, but it is hoped that a larger number will turn up next month.

Reg S2AL has left us and will be taking up residence in Victoria. The new QSL Manager is now Doug SSB. Our YL has received her call sign which is PFB. Congratulations Reg, hope to hear you on the air soon. Reg S2AL is working 8 Mc. every night and can be heard up to 8 p.m. It is hoped some of the v.h.f. gang will give him a call and cheer him up. He was trying to have a ham radio but that face is looking the same way. Never mind, Russ, you will be lucky some night.

The Sunday hook-up has not been very heartening lately with no replies being heard. Maybe it is the conditions or do you think a change of frequency is warranted? A report from the Ross boys in Port Moresby would be appreciated because it is the only time we can all get together and discuss the doings of the Institute and the only way those outside Moresby can give their opinions and learn what is going on. The W.L.C.E.N. messes in the town of Moresby, but every Amateur in the Territory, including Norfolk and Cocos-Keeling Islands and these members should be given every opportunity to take part in its activities.

I would like to thank the Hon. Secretary Norm SNT for his untiring and devoted service during his short stay here and we know that no matter where Norm is, he has the Institute at heart. Best of luck in your new post.

I would like to remind members that the next meeting will be held on 20th December at the Borko Hotel—whack-o. I wish all the members a Very Merry Christmas and a Bright and Prosperous New Year.

CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

ASSISTANCE APPRECIATED

Editor "A.R." Dear Sir,

I wish to express my sincere thanks to those Amateurs who assisted so magnificently with the collecting of data on "Sputnik" I and II. The organisers of the "Moonwatch" Project in Australia were instrumental in the way in which the Radio Amateurs throughout Australia organised the returns of reports so rapidly and reliably in the early stages of the launching.

Without the co-operation of the Divisions, either individually or through the Divisional stations, together with VK3WV (with our most able Federal Secretary), VK5SWI could have achieved very little.

It was my good fortune to be representing the W.I.A. on the Moonwatch Committee and hence it fell to me to collate the data received and to release it to the Press. I take no credit, but feel exceedingly gratified that the Radio Amateur has shown once again that he is "Public Spirited", in a very practical way.

—Gordon M. Bowen, VK3XU.

ERRATUM

In the Balance Sheet of the W.I.A. which appeared on page 13 of the last issue, an error appeared under Current Assets. No. 1 A/c. of the Commonwealth Trading Bank should read £96/12/8.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispense with equipment which is their own personal property. Copy must be received by 5th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

FOR SALE: Custom built commercial design 100w. trans. housed in a standard arched channel rack 5 ft. with dish pan chassis and covers. Fully completely enclosed; finished in black wrinkle. Spec.: Aux. Tuning Unit plug-in coils r.f. meter 0-1, antenna change-over relay. P.A.: 813 plug-in coils 10 to 80 mx, high freq. silver plated split-stator tuning, balanced. Exciter: Geloso 10-80 mx, voltage reg. Buffer-driver: 807 broad-band, switched. Metering on panel behind glass; grid drive 0-10 mils, buffer 0-250 mils, 813 screen 0-50 mils, 813 final 0-150 mils. Mod.: 857J pre-amp, 6J7-8N7-6L6 p.p., high imp. input, matched trans. 500 line output to multi-trans. Power supplies: 1 choke input, 866s, 1000v. aside, 250 mils; 1 choke input, 524, 500v. aside, 250 mils; 1 cond. input, 80, 400v. aside, 150 mils; 1 fil. trans., 2-3.5v. 5 a., 1-7.5v. 5 a., 1-10v. 5 a. Spares: 813, two 6L6s. Sacrifice at £75. G. C. Ramsay, 8 Seby St., Grassmere, South Australia.

SELL: Receiver AR7, modified. A. Elliott, 31 Fenton St., Ascot Vale, Vic., FU 1580.

SELL: Three FS6 and one 109 Mk. II. Power Supplies. £5 lot. A. S. Mathew, 14 William St., Singleton, N.S.W.

WANTED: Converter, cover 3 and 6 with or without power supply. Schnitzelberg, 72 Canning St., Warwick, Qld.

WANTED: Loan Circuit 7-27 Mc. Receiver Type CG46117. J. Kelleher, 3 Paine St., Newport, W.15, Vic.

INDEX TO VOLUME 25—1957

ANTENNA, ETC.

Aerial Reflections	Feb. p.8
A Home Made Three Bander Antenna Couplers for 50 and 144 Mc.	Apr. p.7
A Two Metre Long Yagi	Oct. p.7
Can We Tune a Beam Correctly Near the Ground?	Sep. p.8
Details of a Simple Mobile Whip for 40-80 Mx	Feb. p.2
Monimatch, The	Jan. p.7
Monimatch, Mark II.	Apr. p.5
Multi-band Single Untuned Feeder System	Feb. p.9
On Erecting Towers	Feb. p.10
Polarisation Effects in V.h.f. Mobile	Nov. p.6
The Evils of Multiband Antenna Systems and the Cure	Jul. p.10

AUDIO FREQUENCY EQUIPMENT AND DESIGN

Design Notes on Transistorised Audio Amplifiers	Jan. p.2
Modulator for the QRP Rig	Feb. p.5

BOOK REVIEWS

"Hi-Fi from Microphone to Ear"	Jan. p.3
"R.C.A. Receiving Tubes"	Dec. p.7
"R.C.A. Transmitting Tubes"	Dec. p.7
"The Radio Amateur's Handbook"	Jun. p.14
"The Radio Amateur Operator's Handbook, 1957"	Dec. p.7

CONTEST RESULTS

National Field Day, 1957	Apr. p.12
Ross Hull Memorial Trophy V.h.f. Contest	May p.8
VK Scores for the 1956 "CO" World-Wide DX Contest	Jul. p.15
1956 VK-2L DX Contest	May p.10

DISPOSALS EQUIPMENT

Conversion of the AT5 for 80-40-20-15-10 Metres	May p.2
Modifying the AR7 Receiver:	May p.2
Part One	May p.5
Part Two	Jun. p.2
Part Three	Jul. p.5
Part Four	Aug. p.9
Part Five	Sep. p.6
Type 3 Mark II. Receiver	May p.8
Erratum to above	Jun. p.8
Using Modern Valves in the Type 3 Receiver	Nov. p.3

MISCELLANEOUS

Amateurs and Sales Tax	Nov. p.5
A.O.C.P. Privileges for the Blind	Apr. p.9
A Suggested New Reception Report System	Mar. p.11
Australian DX C.C. Alphabetical List of Countries by Prefix	Jan. p.12
Civil Defence Emergency Network	Mar. p.7
Combining 6v. and 12v. Filament Operation	Mar. p.8
Delegate for I.T.U. Conference	Dec. p.10
Easy Way to get DX Certificates	Jul. p.12
E.H.T. Without Tears	Oct. p.5
Handy Coil and Co-ax Data	Mar. p.12
Ionospheric Prediction Charts	Feb. p.7
—Method of Reading	Apr. p.10
Operation Olympus	Oct. p.6
Radio—31 Years Ago	May p.7
Simple Capacity Bridge for the Blind	

The ARRL I.G.Y. Propagation Research Project	Feb. p.12
Those Equalising Pulses	Oct. p.9
W.I.A. Victorian Division Zones	May p.17
W.I.A. Federal President's Report	Nov. p.13

RECEIVING

All-Band Preamplifier Without Band-Switching	Sep. p.3
Approach to Conversion	Jun. p.2
How's Your Receiver?	Dec. p.2
Modifying the AR7 Receiver:	
Part One	May p.5
Part Two	Jun. p.2
Part Three	Jul. p.5
Part Four	Aug. p.9
Part Five	Sep. p.5
Receiver Noise Improvement	Jan. p.1
The "Snoot-Loop"	Jul. p.5
Type 3 Mark II. Receiver	May p.8
Erratum to above	Jun. p.5
Using Modern Valves in the Type 3 Receiver	Nov. p.3

TELEVISION

B.B.C. (London) T.V. Signals Received in Sydney and Melbourne	Mar. p.14
Diagnosis of T.V.I.	Jan. p.5

TRADE REVIEWS

Autoplex Semi-Automatic Morse Key	Jun. p.10
-----------------------------------	-----------

TRANSMITTING

An Effective Low-Power 144 Mc. Transmitter or Exciter	Jun. p.5
A Transistorised Miniature Transmitter	Mar. p.5
A 100 Watt D.S.B. Mobile Transmitter	Aug. p.2
Conversion of the AT5 for 80-40-20-15-10 Metres	May p.2
Harmonics and Selectivity of Transmitters	Dec. p.5
Part One	May p.3
Low-Power Transmitter or Exciter for "2"	Mar. p.3
"Meet Donald Duck"	Mar. p.15
Notes on the Frequency Stabilisation of Transistor Oscillators	Mar. p.2
Single Sideband: Is It Better Than Amplitude Modulation?	Jul. p.2
Subdue that Over-Modulation and Increase Your Readability	Mar. p.12
90° Phase Shift Networks:	
Part One	Aug. p.5
Part Two	Sep. p.4
Part Three	Oct. p.2

VALVE DATA

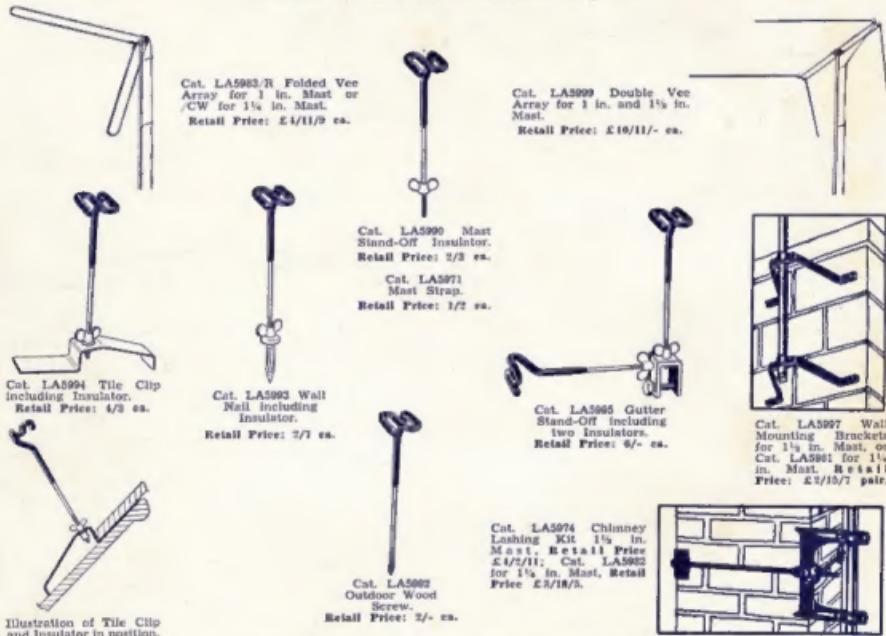
5AS4—Full Wave Vacuum Rectifier	May p.3
6ALS—Twin Diode	May p.9
6AQ5—Beam Power Amplifier	May p.9
6AV8—Twin Diode, High-Mu Triode	Jul. p.14
6BQ6GTB/8CU6—Beam Power Valve	Jul. p.14
6BQ7A—Medium-Mu Triode	Jul. p.14
6SN7GTA—Medium-Mu Twin Triode	Jul. p.14
12AU7—Medium-Mu Triode	Oct. p.9
12BH7—Medium-Mu Triode	Sep. p.3
Amateur Radio, December, 1957	Dec. p.3

TV for the Amateur

AERIAL ARRAYS, INSULATORS, ACCESSORIES

by "BELLING-LEE"

A complete range is provided for Amateur and TV Services of "Belling-Lee" Aerial Components and Accessories, only a few of which can be illustrated here. Owing to the ever-growing demand and increased Australian factory output it has been possible to make a number of reductions in prices.



All above prices include Sales Tax where applicable. Insulators illustrated and listed above are for Flat Ribbon Feeder. If Insulators are required for Tubular Ribbon add word Tubular when ordering.

In addition to the above, prompt delivery can be given of 6 ft. and 9 ft. x 1½ in. Masts, 8 ft., 9 ft., 16 ft. x 1½ in. Masts, and complete Single Vee or Double-Vee Assemblies.

For ease and speed of installation, high quality performance and endurance to all weather conditions, "Belling-Lee" TV Aerials stand supreme. Order from your nearest Wholesaler or direct enquiries to:

R. H. CUNNINGHAM PTY. LTD.

8 BROMHAM PLACE,
RICHMOND, E.I. VIC.
Telephone: JB 1614



16 ANGAS STREET.
MEADOWBANK, N.S.W.
Telephones: WY 0316,
WY 0317, WY 3852